Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

June 11, 2020

9:00 a.m.

Meeting will be held via webinar

To request an agenda in an alternative format or to request accommodations to facilitate meeting participation, please call the Clerk of the Board at least two working days prior to the meeting. Meeting webinar/teleconference instructions can be accessed at the following link: https://www.sdmts.com/about-mts-meetings-and-agendas/executive-committee

		ACTION RECOMMENDED
A.	ROLL CALL	
B.	APPROVAL OF MINUTES – April 2, 2020	Approve
C.	COMMITTEE DISCUSSION ITEMS	
1.	Zero Emission Bus Pilot and Transition Plan Update (Mike Wygant & Steve Clermont with Center for Transportation and the Environment) Action would: (1) provide feedback on the draft Zero Emission Bus (ZEB) Transition Plan; and (2) forward a recommendation to the Board of Directors to authorize staff to request an extension from the California Air Resources Board (CARB) for submission of the ZEB Rollout Plan.	Possible Action
2.	Surplus Land and Joint Development: Assembly Bill (AB) 1486 Impacts (Karen Landers) Action would receive a report and give direction to staff regarding potential impacts to the MTS Joint Development Program and compliance with AB 1486.	Possible Action
D.	REVIEW OF DRAFT June 18, 2020 MTS BOARD AGENDA	
E.	REVIEW OF SANDAG TRANSPORTATION COMMITTEE AGENDA Review of SANDAG Transportation Committee Agenda and discussion regarding any items pertaining to MTS, San Diego Transit Corporation, or San Diego Trolley, Inc. Relevant excerpts will be provided during the meeting.	Possible Action

F. COMMITTEE MEMBER COMMUNICATIONS AND OTHER BUSINESS

G PUBLIC COMMENTS

H. NEXT MEETING DATE: July 16, 2020

I. ADJOURNMENT

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE
1255 Imperial Avenue, Suite 1000
San Diego, CA 92101

April 2, 2020

MINUTES

[Clerk's note: Except where noted, public, staff and board member comments are paraphrased. Note that the meeting was conducted via webinar to comply with public health orders].

A. ROLL CALL

Chair Fletcher called the Executive Committee meeting to order at 9:00 a.m. A roll call sheet listing Executive Committee member attendance is attached.

B. APPROVAL OF MINUTES

Mr. Arambula moved for approval of the minutes of the March 5, 2020, MTS Executive Committee meeting. Mr. Ward seconded the motion, and the vote was 5 to 0 in favor.

C. COMMITTEE DISCUSSION ITEMS

1. Minibus and Americans with Disabilities Act (ADA) Paratransit Fixed Route Services – Contract Award (Sam Elmer, Mike Wygant, and Larry Marinesi)

Mike Wygant, Chief Operating Officer – Transit Services, provided a brief presentation regarding the Minibus and ADA Paratransit Fixed Route Services Contract Award. He noted at the previous Executive Committee meeting, staff provided a detailed presentation regarding the Request for Proposals (RFP) process related to this contract. Mr. Wygant stated that the Executive Committee directed staff to obtain feedback regarding this contract from the MTS Accessible Services Advisory Committee (ASAC) before approval of the contract. Mr. Wygant noted that the full contract was provided to the ASAC members for review and feedback. The feedback received from the ASAC members was included in the meeting packet. All feedback was supportive of approving the contract. Mr. Wygant reviewed the staff recommendation and asked for any comments or questions.

Vice Chair Sotelo-Solis thanked MTS staff for conducting additional outreach with the ASAC members regarding this contract.

Action Taken

Ms. Salas moved to forward a recommendation to the Board of Directors to authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. B0703.0-19 in the amount of $333,398,821.18 with First Transit, Inc. for the provision of Minibus fixed route and ADA Paratransit services for a six (6) year base period with two 2-year option terms to be exercised at the CEO's discretion. Vice Chair Sotelo-Solis seconded the motion, and the vote was 5 to 0 in favor.

2. America Plaza/Santa Fe Depot Station Area Connection Project – Design Effort Updates (Peter Casellini)

Peter Casellini, Senior Transportation Planner, and representatives from Mott MacDonald and Ferh & Peers, provided a presentation on the America Plaza/Santa Fe Depot Station Area Connection Project. Mr. Casellini reviewed the purpose and need for updates to America Plaza and Santa Fe Depot. He discussed the details of the project area; goals and objectives; challenges and opportunities; and the outreach plan and schedule. Representatives from Mott MacDonald and Fehr & Peers continued the presentation and reviewed the existing conditions of the project areas, and the three potential design options for improvements. Lastly, Mr. Casellini reviewed the next steps for the project and asked for any comments or questions.

Mr. Ward thanked MTS staff for providing the presentation and looking to address pedestrian accessibility and safety improvements in these areas. He commented that having multimodal access between the stations to address first mile – last mile, will be critical for the traveling public. He recommended to include sufficient bicyclist access in the project to assist with complete streets concepts. Mr. Ward asked how funding was prioritized for these stations compared to other stations in the region. Ms. Cooney stated that they focused on this area, because it is a major hub in the service area. She noted that there is a need to support increased access for these stations given the number of transit lines that intersect at this point. Mr. Ward stated that he would like to see additional projects similar to this come on board as funding becomes available. Mr. Ward stated that he preferred option 2 discussed in the presentation.

Chair Fletcher asked if staff was leaning towards a specific option. Ms. Cooney stated that they believe option 2 is a good solution, but they are still early in the project design process. She noted that staff will continue working with the city and public outreach process to refine the options.

Ms. Salas inquired about the potential collaboration of this project and SANDAG's 5 Big Moves. Mr. Jablonski stated that this project would pre-date SANDAG's plans, and would help benefit transit riders in the near future, rather than having to wait long term for SANDAG's 5 Big Moves planning process.

Action Taken

No action taken. Informational item only.

3. COVID-19 Update (Paul Jablonski)

Paul Jablonski, Chief Executive Officer, provided an update on COVID-19. He stated that personal protective equipment (PPE) gear is available for all employees, if requested. He stated that there has been constant communication and updates provided to staff regarding COVID-19. Mr. Jablonski commented that bus passengers are now being asked to board via the rear door. He noted that riders will not have to tap their compass cards on the bus validators, but will be asked to flash their passes to the drivers. He stated that fares are still required to be purchased to ride the system. MTS has identified all management employees that are able to work remotely and the Information Technology (IT) department has provided those employees with necessary

computing capabilities. He commented that ridership seems to have leveled off at about a 70% decline on bus and 60% on trolley. He noted that communication was sent to all Board Members detailing the modified service schedule that will begin in two weeks. By reducing the service, MTS will still be able to maintain operator working hours, and also maintain a standby group of operators that can fill in when needed. He emphasized that MTS has maintained high levels of communication with all employees, riders, general public, and business partners. Mr. Jablonski noted that staff has provided the Federal Transit Administration (FTA) with financial impact data. He stated that staff is estimating a $28 million impact through the end of this fiscal year. Mr. Jablonski noted that Congress passed the Coronavirus Aid, Relief and Economic Stability (CARES) Act. Information related to the CARES Act will be available and discussed with the MTS Budget Development Committee (BDC). Mr. Jablonski also noted that MTS recently helped the City of San Diego move homeless individuals to alternate shelter locations in response to COVID-19 concerns.

Chair Fletcher thanked the MTS staff for their efforts, support, and actions related to COVID-19.

Mr. Ward thanked MTS for the constant communication and planning in response to COVID-19. Mr. Ward asked about the procedures MTS will take if a staff member tests positive for COVID-19. Mr. Jablonski stated that MTS has told staff to stay home if they are not feeling well. He noted that staff is asked to contact their doctor and keep their supervisor informed. Each potential case will be treated differently given the circumstances surrounding their exposure to staff, the public, etc. Mr. Ward asked about the rear door boarding and the requirement of fares. Mr. Jablonski stated that MTS is not accepting cash fares, but are still requiring riders to purchase fares with their compass cards.

Ms. Salas thanked MTS for the great work in response to COVID-19.

Chair Fletcher commented on the impacts of the COVID-19 crisis and how that impacts the Elevate SD 2020 process. Due to these issues and having to stop public outreach processes, he recommended that the Elevate SD 2020 process be paused for a few weeks to focus on the critical matters related to COVID-19. Chair Fletcher stated that the Elevate SD 2020 process can be revisited once operations begin shifting back to normal processes. The Executive Committee members agreed.

Action Taken

No action taken. Informational item only.

D. REVIEW OF DRAFT April 16, 2020 BOARD AGENDA

Recommended Consent Items

6. Light Rail Vehicle (LRV) Accident and Vandalism Repair Services – Contract Award
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. L1531.0-20, with Carlos Guzman, Inc., for LRV Accident, Vandalism and Repair Services as detailed in the scope of work, in the amount of $13,170,051.51, for a five (5) year period from May 1, 2020 to April 30, 2025.

7. Armored Transport Services – Contract Amendment
   Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 3 to MTS Doc. No. G1497.3-13 with Sectran Security, Inc., extending the contract to June 30, 2023, and increasing the contract amount by $483,114.11 to $1,456,721.21.

8. First Responder Network Authority (FirstNet) Services for Five (5) Years – Contract Award
   Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2377.0-20, with AT&T Corp. for FirstNet Services for five (5) years in the amount of $2,264,288.80.

E. REVIEW OF SANDAG TRANSPORTATION COMMITTEE AGENDA

There was no SANDAG Transportation Committee agenda discussion.

F. COMMITTEE MEMBER COMMUNICATIONS AND OTHER BUSINESS

There was no Committee Member Communications and Other Business discussion.

G. PUBLIC COMMENTS

Vianney Ruvalcaba – Ms. Ruvalcaba provided written comments to the Executive Committee prior to the meeting. The full written statement is included in the final meeting packet posted on the MTS website.

Rosa Olascoaga – Ms. Olascoaga provided written comments to the Executive Committee prior to the meeting. The full written statement is included in the final meeting packet posted on the MTS website.

H. NEXT MEETING DATE

The next Executive Committee meeting is scheduled for May 7, 2020, at 9:00 a.m. [Clerk's note: The May 7, 2020 Executive Committee meeting was subsequently cancelled].

I. ADJOURNMENT

Chair Fletcher adjourned the meeting at 10:08 a.m.

/s/ Nathan Fletcher
Chairperson

Attachment: Roll Call Sheet

EXECUTIVE COMMITTEE
SAN DIEGO METROPOLITAN TRANSIT SYSTEM

ROLL CALL

MEETING OF (DATE) April 2, 2020 CALL TO ORDER (TIME) 9:00 a.m.

RECESS _____ RECONVENE _____

CLOSED SESSION _____ RECONVENE _____

ADJOURN 10:08 a.m.

BOARD MEMBER		(Alternate)		PRESENT (TIME ARRIVED)	ABSENT (TIME LEFT)
ARAMBULA	☒	(Hall)	☐	9:00 a.m.	10:08 a.m.
FLETCHER (Chair)	☒	(Cox)	☐	9:00 a.m.	10:08 a.m.
SALAS	☒	(Sandke)	☐	9:00 a.m.	10:08 a.m.
SOTELO-SOLIS	☒	(Vice Chair – no alternate)		9:00 a.m.	10:08 a.m.
WARD	☒	(Montgomery)	☐	9:00 a.m.	10:08 a.m.

SIGNED BY THE CLERK OF THE BOARD: Julia Tuer

CONFIRMED BY THE GENERAL COUNSEL: _____

Metropolitan Transit System

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Agenda Item No. C1

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

June 11, 2020

SUBJECT:

ZERO EMISSION BUS PILOT AND TRANSITION PLAN UPDATE (MIKE WYGANT & STEVE CLERMONT WITH CENTER FOR TRANSPORTATION AND THE ENVIRONMENT)

RECOMMENDATION:

That the Executive Committee:

1) Provide feedback on the draft Zero Emission Bus (ZEB) Transition Plan; and

2) Forward a recommendation to the Board of Directors to authorize staff to request an extension from the California Air Resources Board (CARB) for submission of the ZEB Rollout Plan.

Budget Impact

None at this time.

DISCUSSION:

The Innovative Clean Transit (ICT) rule passed in December of 2018 by CARB mandated a purchase requirement of ZEBs for transit operators with fleets larger than 100 buses starting in 2023.

In October 2017, the MTS Board of Directors authorized the CEO to have staff develop and implement a plan for a ZEB pilot program to prepare for this mandate. Phase I of the pilot project included the purchase and installation of eight (8) Battery Electric Buses and twelve (12) chargers. In partnership with the Center for Transportation and the Environment (CTE), who was hired as MTS's ZEB project consultant, MTS developed a scope and design for the ZEB pilot program. CTE has since assisted MTS with oversight

of the pilot implementation, and together have collected and analyzed data assessing the operation and performance challenges and successes of ZEBs in MTS's service environment.

The ICT requires transit agencies to submit a Rollout Plan to CARB to indicate compliance with the ZEB purchase mandate. In preparation for completion of the Rollout Plan CTE and staff have prepared a draft Transition Plan (attachment A) using data collected during the pilot.

MTS staff and CTE will provide the Executive Committee with a report on the ZEB Pilot Phase I and draft Transition Plan.

The Rollout Plan is due to CARB on June 30, but CARB has agreed to allow for delayed submissions in recognition of the challenges in gaining public and Board input during the Covid-19 pandemic. Staff recommends that the Board delay submission of the Rollout Plan to gain additional public and Board feedback.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft Transition Plan
B. CARB Rollout Plan Guidance Template
C. CARB Rollout Plan – Section F – DACs

Metropolitan Transit System

Zero-Emission Bus Fleet Transition Study

June 2020

Prepared by:

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Executive Summary

MTS engaged the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study in March 2018. The study's goal is to create a plan for a 100% zero-emission fleet by 2040 to be in compliance with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). The results of the study will be used to inform MTS Board members and educate MTS staff of estimated costs, benefits, constraints, and risks to guide future planning and decision making. In addition to the ZEB transition study, MTS has initiated a pilot program to test ZEB technology in their service to better understand the technology and inform decision making. In 2019, MTS installed six (6) 62.5-kilowatt (kW) ChargePoint vehicle chargers at the Imperial Avenue Division (Imperial Ave) and deployed six (6) 40-foot New Flyer battery-electric buses (BEBs). In 2020, MTS installed an additional two (2) ChargePoint chargers each at South Bay Bus Maintenance Facility (South Bay), Kearny Mesa Division (Kearney Mesa), and the East County Bus Maintenance Facility (East County) to facilitate BEB pilot operations throughout the service area. Finally, two (2) 40-foot Gillig BEBs are scheduled for deployment in late 2020.

Zero-emission technologies considered in this study include BEBs and hydrogen fuel cell-electric buses (FCEBs). BEBs and FCEBs have similar electric drive systems that feature a traction motor powered by a battery. The primary difference between BEBs and FCEBs, however, is the amount of battery storage and how the batteries are recharged. The energy supply in a BEB comes from electricity provided by an external source, typically the local utility's grid, which is used to recharge the batteries. The energy supply for an FCEB is completely on-board, where hydrogen is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries to extend the range. The electric drive components and energy source for a BEB and FCEB are illustrated in **Figure ES-1.**

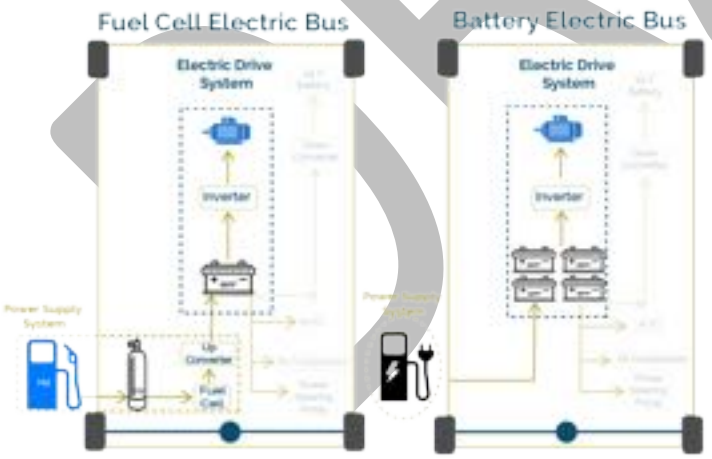


Figure ES-1 – Battery and Fuel Cell Bus Schematic

On December 14, 2018, CARB enacted the ICT regulation with a state wide goal, requiring all California public transit agencies to gradually transition to a 100 percent (%) zero-emission bus (ZEB) fleet. The ruling specifies the timeline for the required annual percentage of new bus procurements that must be zero-emission, starting with 25% of new bus purchases in 2023 and ramping up to 100% of new bus purchase in 2029. Following this schedule is intended to lead to a 100% zero-emission fleet in 2040. However, there are some waivers that allow for purchase deferrals in the event of economic hardships or if the technology has not matured to meet the service requirements of a given route. These concessions recognize that the technologies may cost more than current technologies on a life cycle basis and the technology may not currently meet all service requirements.

CTE worked closely with MTS staff throughout the project to develop the approach, define the assumptions, and confirm the results. The approach for the study is based on analysis of five (5) scenarios:

1. Baseline
2. BEB Depot-Only Charging
3. BEB Depot and On-Route Charging
4. FCEB Only
5. Mixed BEB and FCEB

A primary assumption for the transition analysis is that MTS is unable to increase fleet size as a strategy to overcome BEB range limitations to achieve a 100% ZEB transition due to space constraints present at the current MTS depots. The Baseline scenario assumes that there are no changes to the current technology for bus procurements (e.g. compressed natural gas [CNG], gasoline, diesel, propane) and is used for comparison to the other ZEB transition scenarios. The BEB Depot-Only Charging and FCEB Only scenarios are used as the 'bookends' to help identify potential constraints or risks in scaling to fleetwide adoption of ZEBs that may not be readily apparent from pilot-bus deployments.

The BEB Depot-Only Charging scenario assumes that vehicles are charged only at the depot when they are not in-service. In the BEB Depot-Only scenario, BEBs are only deployed in-service where analysis determines that they can complete specified service blocks (e.g. meet the daily mileage requirements). The BEB Depot-Only Charging scenario meets the requirements of the CARB ICT regulation in that BEBs will be utilized for all service that meet the daily mileage requirements. The BEB Depot and On-Route Charging scenario was developed to mitigate the potential need for additional bus purchases when a one-for-one replacement with a depot-charged BEB was not possible. Finally, a Mixed BEB and FCEB scenario was developed with the underlying assumption that neither technology is suitable for 100% of the fleet replacement due to inherent constraints.

Improvements in technology beyond the current state are expected, but there is no indication of when we may see the BEB technology improve to the point of one-for-one replacement of internal combustion engine vehicles or when the cost of FCEB or hydrogen fuel will decrease to cost competitive levels. As a result, when considering all the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for MTS' ZEB transition.

The underlying basis for the assessment is CTE's ZEB Transition Planning Methodology, which is a complete set of analyses used to inform agencies in converting their fleets to zero-emission that has been developed over the last decade. The methodology consists of data collection, analysis and assessment stages; these stages are sequential and build upon findings in previous steps. The assessment allows CTE to develop engineering estimates for vehicle efficiency and energy consumption to project the range of given vehicle technologies in MTS service. CTE collected sample data from sixteen (16) MTS routes and used current ZEB specifications to estimate range and energy consumption on all MTS routes and blocks under varying environmental and passenger loading conditions. Once this information was established, CTE completed the following assessment to develop cost estimates for each transition scenario.

1. Fleet Assessment
2. Fuel Assessment
3. Facilities Assessment
4. Maintenance Assessment
5. Total Cost of Ownership Assessment

These assessments result in a total cost of ownership, inclusive of capital investments (ZEBs and fueling infrastructure) and operating expenses (fuel and maintenance) over the transition period (2020 – 2040) for each transition scenario. The table and figure below provide a side-by-side comparison of the cumulative transition costs for each scenario.

Table ES-1 – Total Cost of Ownership, by Scenario

	Baseline	BEB Depot Only	BEB Depot + On-Route	FCEB Only	Mixed BEB and FCEB
Fleet	$ 808,294,000	$ 1,086,465,000	$ 1,105,467,000	$ 1,355,484,000	$ 1,181,414,000
Fuel	$ 252,569,000	$ 298,234,000	$ 314,657,000	$ 462,731,000	$ 323,380,000
Infrastructure	-----	$ 120,305,000	$ 131,489,000	$ 73,394,000	$ 164,915,000
Maintenance	$ 762,263,000	$ 773,287,000	$ 782,339,000	$ 812,484,000	$ 804,691,000
Total	**$ 1,823,126,000**	**$ 2,278,291,000**	**$ 2,333,952,000**	**$ 2,704,093,000**	**$ 2,474,400,000**
Incremental Cost Over Baseline		**$ 455,165,000**	**$ 510,826,000**	**$ 880,967,000**	**$ 651,274,000**
% ZEB in 2040	**2%**	**77%**	**84%**	**95%**	**95%**

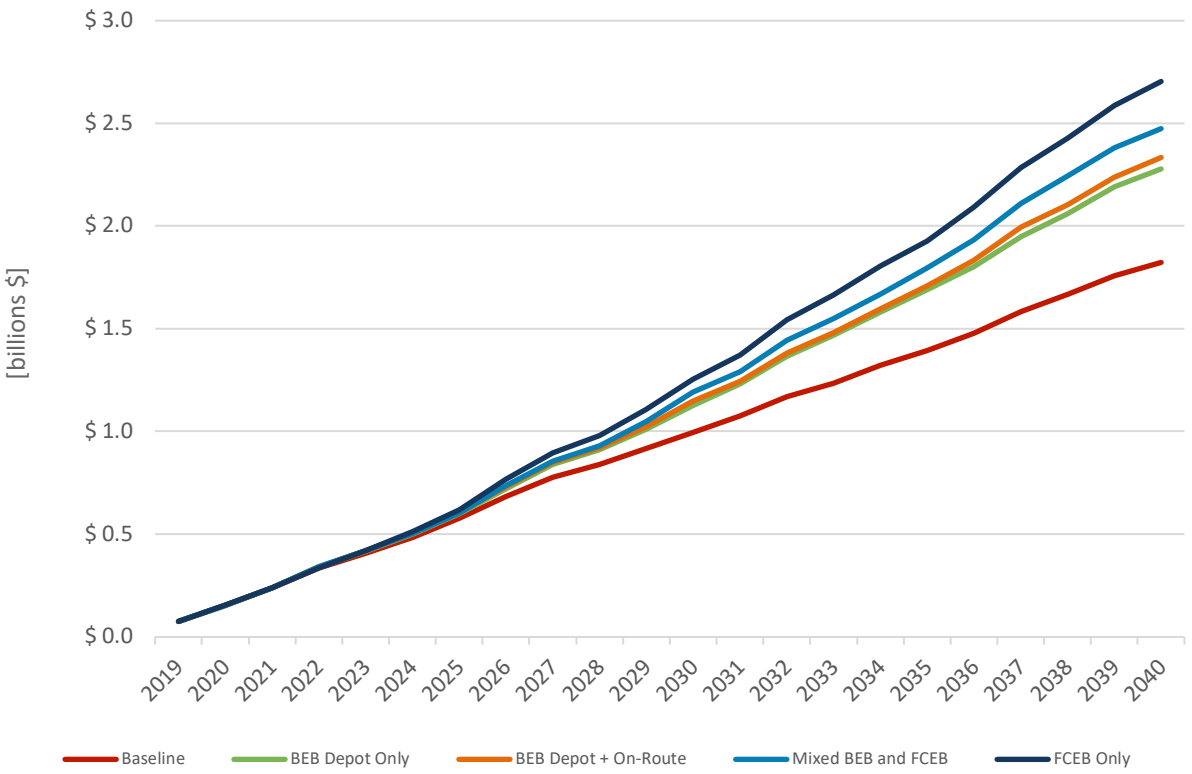


Figure ES-2 – Total Cost of Ownership, by Scenario

If MTS selects an all BEB strategy, incremental ZEB transition costs are likely to fall between approximately $455 million for the BEB Depot-Only Charging scenario, where approximately 77% of MTS' fleet is replaced with BEBs by 2040, to $511 million for the BEB Depot and On-Route Charging scenario, where approximately 84% of MTS' fleet is replaced with BEBs by 2040. The difference in incremental cost for these scenarios is a result of more vehicles being transitioned due to the use of on-route charging infrastructure, the incremental cost of the on-route charging infrastructure, as well as higher utility charges as a result of on-route charging because higher demand charges are incurred throughout the on-peak when on-route charging will occur. It should be noted that this analysis includes all vehicle lengths and types (40', 45', 60', and cutaways/minibus). While manufacturers have produced BEBs for each of the vehicle lengths and types used at MTS, only 40' and 60' BEBs have completed Altoona testing and are applicable under the CARB ICT regulation. The BEB Depot-Only Charging scenario meets the CARB ICT regulation requirements assuming a waiver for depot-charged technology that does not meet service requirements is granted as is clearly detailed in the rule.

If MTS selects an FCEB Only strategy, incremental ZEB transitional costs are estimated at approximately $881 million for replacement of approximately 95% of the fleet with FCEBs by 2040. The remaining 5% would be replaced during the next vehicle replacement cycle after 2040, as it is anticipated that by 2040, FCEB technology will have advanced such that all MTS service could be completed using FCEBs. A primary assumption for the FCEB analysis is that FCEB vehicles will be available for all vehicle types and lengths during the transition period. Currently, FCEBs have only been produced in 40' and 60' models. In addition, due to the limited

deployment of FCEBs in service in the United States, FCEB and hydrogen fuel costs remain high. These costs are expected to come down in the future as more vehicles are deployed and as hydrogen production ramps up; however, there is currently no basis for assuming future cost reductions. Also, the current experience with FCEB maintenance cost is high due to the fact that much of the data is based on older vehicles that are no longer under warranty and require the support of a European company. As such, there are more unknowns associated with the incremental costs for the FCEB scenarios, and costs are likely to be more subject to change. It is expected that the cost of the FCEB Only and Mixed Fleet scenarios will come down if a larger number of vehicles and infrastructure are sold within the U.S., but the extent is still unknown. Significant investments in hydrogen production and distribution infrastructure is required and will take years to develop to gain a better understanding of the long-term costs for FCEB Only deployment.

As expected, with an incremental cost of approximately $651 million, the Mixed BEB and FCEB scenario that transitions approximately 95% of MTS' fleet to ZEB by 2040, has an incremental cost that falls between an all BEB and all FCEB deployment. Though the costs are considerably cheaper for a mixed fleet deployment than FCEB Only, there are expected to be complexities with managing the fleet through the transition that would require maintaining existing internal combustion engine vehicle infrastructure (CNG, propane, and gasoline), installing new BEB infrastructure, and installing new FCEB fueling infrastructure. Space constraints at the depot will require careful planning if this path is selected.

MTS may accumulate ZEB credits from their procurement of ZEBs prior to 2023. These credits can be used in place of ZEB purchases to satisfy CARB's ZEB procurement requirements beginning in 2023. With the purchase of eight (8) BEBs to support the ZEB pilot operations in 2019 and 2020, and the purchase of twelve (12) BEBs to support a new service in 2022, MTS will have twenty (20) ZEB credits that can be applied to ZEB purchase requirements in 2023 and beyond. The use of these ZEB credits is not considered in the analysis of the transition scenarios.

As a result, recommendations for MTS are as follows:

1. **Remain proactive with ZEB deployments:** MTS has been proactive in the purchase and deployment of BEBs through their ZEB Pilot Program. Significantly more development, data collection, and analyses are needed before the technology is ready for fleetwide deployment. For example, BEBs will require charge management software, hardware, and standards to manage the fleetwide transition. For FCEB deployment to be competitive, lower fuel costs that will evolve over time with the production of hydrogen at scale is required. MTS should move forward carefully, taking advantage of various grant and incentive programs to offset the incremental cost for ZEB deployment. Incentive programs may be eliminated in future years as ZEB procurements are required instead of being optional.
2. **Target specific routes and blocks for early ZEB deployments:** MTS should consider the strengths of given ZEB technologies and focus those technologies on routes and blocks that take advantage of their efficiencies and minimizes the impact of the constraints related to the respective technologies. For example, depot-charged BEBs for shorter

routes and blocks, on-route charged BEBs for mid-range routes with layovers at a transit center, and FCEBs for long routes or routes with higher speeds and/or heavier loads. These technologies cannot follow a "one-size-fits-all" approach from either a performance or cost perspective. Matching the technology to the service will be a critical best practice. Results from the ZEB Pilot Program will help to inform these decisions.

3. **Continue with BEBs and consider FCEBs:** At this stage, it is too early to tell which technology will dominate the market 10 to 20 years from now. Having capability to deploy both ZEB technologies creates an opportunity for MTS to fully assess BEBs and FCEBs to determine which technology can best meet the operational range requirements while being financially efficient and sustainable. MTS should continue to explore possible opportunities and funding mechanisms to deploy FCEBs in service to further their understanding of the technology and how it can fit into the MTS service portfolio.

The transition to ZEB technologies represents a paradigm shift in bus procurement, operation, maintenance, and infrastructure. The technology requires significant development before it is ready to support fleetwide transitions. However, it is only through a continual process of deployment with specific goals for advancement that the industry can achieve the goal of economically sustainable, zero-emission public transit. Ultimately, the ZEB technology that is most efficient and sustainable to operate will evolve into either the majority ZEB solution or the only ZEB solution.

Introduction

Founded in 1975, the San Diego Metropolitan Transit System (MTS) provides bus and light rail services to the urban areas of San Diego County and rural parts of East County, generating over 92 million passenger trips per year.

MTS engaged the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study in March 2018. The study's goal is to create a plan for a 100% zero-emission fleet by 2040 to be in compliance with the Innovative Clean Transit regulation enacted by California Air Resources Board (CARB). The results of the study will be used to inform MTS Board members and educate MTS staff of estimated costs, benefits, constraints, and risks to guide future planning and decision making. In addition to the ZEB transition study, MTS has initiated a pilot program to test ZEB technology in their service to better understand the technology and inform decision making. In 2019, MTS installed six (6) 62.5-kilowatt (kW) ChargePoint vehicle chargers at the Imperial Avenue Division (Imperial Ave) and deployed six (6) 40-foot New Flyer battery-electric buses (BEBs). In 2020, MTS installed an additional two (2) ChargePoint chargers each at South Bay Bus Maintenance Facility (South Bay), Kearny Mesa Division (Kearney Mesa), and the East County Bus Maintenance Facility (East County) to facilitate BEB pilot operations throughout the service area. Finally, two (2) 40-foot Gillig BEBs are scheduled for deployment in late 2020.

Zero-emission technologies considered in this study include BEBs and hydrogen fuel cell-electric buses (FCEBs). BEBs and FCEBs have similar electric drive systems that feature a traction motor powered by a battery. The primary difference between BEBs and FCEBs, however, is the amount of battery storage and how the batteries are recharged. The energy supply in a BEB comes from electricity provided by an external source, typically the local utility's grid, which is used to recharge the batteries. The energy supply for an FCEB is completely on-board, where hydrogen is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries, extending the range. The electric drive components and energy source for a BEB and FCEB are illustrated in **Figure 1**.

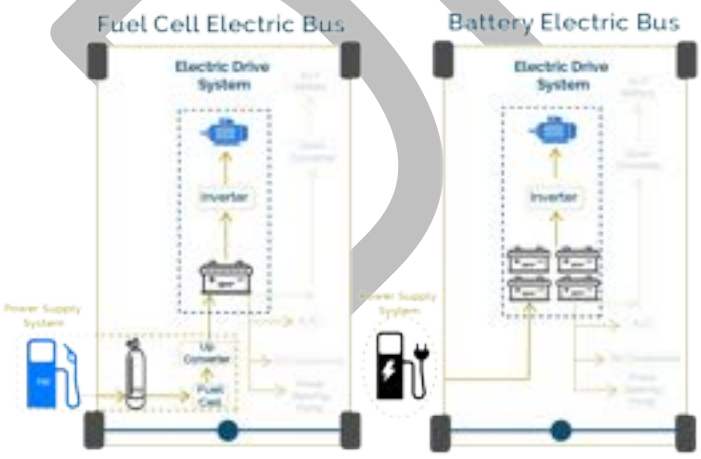


Figure 1 - Battery and Fuel Cell Electric Bus Schematic

CARB's Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation requiring all California public transit agencies with the state wide goal to gradually transition to a 100 percent ZEB fleet. The ruling specifies the timeline for the required annual percentage of new bus procurements that must be zero-emission, starting with 25% of new bus purchases in 2023 and ramping up to 100% of new bus purchase in 2029. This section summarizes key elements of the ICT.

ZEB Purchase Requirements

MTS' fleet exceeds 100 buses and, as such, is considered a "large" agency by CARB. All new bus purchases must include a specified percentage of ZEBs in accordance with the following schedule:

Table 1 – CARB Innovative Clean Transit (ICT) ZEB Transition Timeline.

Starting January 1	Percent of New Bus Purchases	Purchase Discharge Criteria
2023	25%	If 850 ZEBs by 12/31/2020
2024	25%	If 1250 ZEBs by 12/31/2020
2025	25%	-
2026	50%	-
2027	50%	-
2028	50%	-
2029	100%	-

New bus purchase requirements may be set-aside in 2023 and 2024 if a minimum number of buses are purchased in each respective year across all transit agencies in California. Purchase of cutaway/minibus, over-the-road, double-decker, or articulated buses may be deferred until the latter of either January 1, 2026 or until a model of a given type has passed the "Altoona" bus testing procedure and obtained a Bus Testing Report. As of the date of this report, only heavy-duty 30', 35', 40' and 60' BEBs have passed Altoona bus testing.

ZEB Bonus Credits

Agencies may earn ZEB Bonus Credits for early acquisition that may be used against future compliance requirements. To earn bonus credits, ZEBs must be placed into service according to the following schedule. Bonus credits expire December 31, 2028.

Table 2 - ZEB Bonus Credits Applied to CARB ICT Transition Schedule

Technology	Placed in Service	ZEB Bonus Credit
BEB	As of January 1, 2018	1
FCEB	As of January 1, 2018	2
FCEB	January 1, 2018 to December 31, 2022	1

ZEB Credits

Although MTS is not expected to have ZEB Bonus Credits to utilize toward compliance, ZEBs purchased in advance of the new purchase requirements may be used as credits toward annual ZEB procurement compliance. As such, BEBs purchased in 2019 (6), 2020 (2), and planned for purchase in 2022 (up to 12) represents 20 ZEB credits that may be applied toward purchase compliance with the ICT regulation in the early years of the transition.

ZEB Rollout Plan

MTS is required to submit a ZEB Rollout Plan that has been approved by their governing board by July 1, 2020. ZEB Rollout Plans must include all of the following components:

- A goal of full transition to ZEBs by 2040 with careful planning that avoids early retirement of conventional internal combustion engine buses;
- Identification of the types of ZEB technologies a transit agency is planning to deploy, such as battery electric or fuel cell electric bus;
- A schedule for construction of facilities and infrastructure modifications or upgrades, including charging, fueling, and maintenance facilities, to deploy and maintain ZEBs. This schedule must specify the general location of each facility, type of infrastructure, service capacity of an infrastructure, and a timeline for construction;
- A schedule for zero-emission and conventional internal combustion engine buses purchases and lease options. This schedule for bus purchases replacements must identify the bus types, fuel types, and number of buses;
- A schedule for conversion of conventional internal combustion engine buses to ZEBs, if any. This schedule for bus conversion must identify number of buses, bus types, the propulsion systems being removed and converted to;
- A description on how a transit agency plans to deploy ZEBs in disadvantaged communities as listed in the latest version of CalEnviroScreen at the time of the Rollout Plan is submitted;
- A training plan and schedule for ZEB operators and maintenance and repair staff; and
- Identification of potential funding sources.

Exemptions

Agencies may request exemption from ZEB purchase requirements in a given year due to circumstances beyond the transit agency's control. Acceptable circumstances include:

- Delay in bus delivery is caused by setback of construction schedule of infrastructure needed for the ZEB.
- Available depot-charged BEBs cannot meet a transit agency's daily mileage needs.
- Available ZEBs do not have adequate gradeability performance to meet the transit agency's daily needs
- When a required ZEB type for the applicable weight class based on gross vehicle weight rating (GVWR) is unavailable for purchase because the ZEB has not passed Altoona, cannot meet ADA requirements, or would violate any federal, state, or local regulations or ordinances.

- When a required ZEB type cannot be purchased by a transit agency due to financial hardship and the agency can demonstrate that they have applied for applicable ZEB funding mechanisms.

Reporting Requirements

Starting March 31, 2021, and continuing every year thereafter through March 31, 2050, each transit agency must submit an annual ICT ZEB compliance report by March 31 for the prior calendar year. The initial report must be submitted by March 31, 2021, and must include the number and information of active buses in the transit agency's fleet as of December 31, 2017.

ZEB Transition Planning

ZEB Transition Planning Methodology

This study uses CTE's ZEB Transition Planning Methodology, which is a complete set of analyses used to inform agencies in converting their fleets to zero-emission that has been developed over the last decade. The methodology consists of data collection, analysis and assessment stages; these stages are sequential and build upon findings in previous steps. The work steps specific to this study are outlined below:

1. Planning and Initiation
2. Requirements Analysis
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Facilities Assessment
7. Maintenance Assessment
8. Total Cost of Ownership Assessment

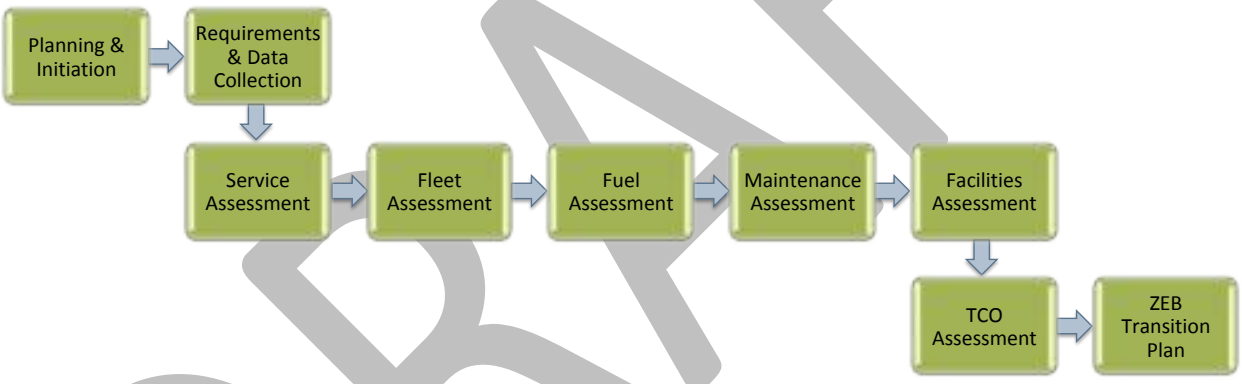


Figure 2 – CTE's ZEB Transition Study Methodology

The **Planning and Initiation** phase builds the administrative framework for the transition study. During this phase, the project team drafted the scope, approach, tasks, assignments and timeline for the project. CTE worked with MTS staff to plan the overall project scope and all deliverables throughout the full life of the study. CTE conducted an "Assumptions Workshop" to start the ***Requirements & Data Collection*** phase. The assumptions collected during this phase provide key parameters used in each of the Assessment phases that follow. CTE collected fleet, operational, maintenance, and facilities information to define the "As Is" or baseline scenario. CTE also collected route and block mileage and duty cycle information as the basis for the Service Assessment.

During the ***Service Assessment***, CTE worked with MTS staff to assess how MTS fleet vehicles are used and to identify service requirements. CTE leverages several different tools and methods, including route modeling and simulation software, and empirically-derived screening models based on real world operational data, to calculate expected energy efficiency, range,

endurance, and energy consumption to identify any limitations or constraints to the application of electric vehicle technologies. Results from modeling were used to estimate achievability of every block in MTS' network using BEBs and FCEBs. The results from the Service Assessment were used to guide ZEB procurements in the Fleet Assessment and determine energy requirements (Depot Charging, On-Route Charging, and/or Hydrogen) in the Fuel Assessment.

The **Fleet Assessment** develops a projected timeline for replacement of current buses with ZEBs that is consistent with the agency's Fiscal Year 2019 fleet replacement plan. Multiple projection scenarios are created utilizing different combinations of ZEB technologies. This assessment also includes a projection of fleet capital cost over the transition lifetime and it can be optimized with regard to any state mandates, like CARB's ICT regulation, or to meet agency goals such as minimizing cost or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full life of the transition for each scenario, including the agency's current internal combustion engine vehicles. To more accurately estimate BEB charging costs, a focused Charging Analysis is performed to simulate daily system-wide charging use. As current technologies are phased out in later years of the transition, the Fuel Assessment calculates the increasing energy requirements for ZEBs. The Fuel Assessment also provides a total energy cost over the transition lifetime.

The **Facilities Assessment** determines the necessary infrastructure to support the projected zero-emission fleet based on results from the Fleet Assessment and Fuel Assessment. The Facilities Assessment is calculated for each scenario used in the Fleet and Fuel Assessments. The result shows quantities of hydrogen and battery electric infrastructure and calculates associated costs.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the life of the project. This includes costs related to existing internal combustion engine vehicles remaining in the fleet, as well as new BEBs and FCEBs, calculated for each scenario.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages and provides a comprehensive view of all associated costs, organized by scenario, over the transition lifetime.

Assessment Scenarios

The approach for this ZEB transition study is based on the creation and analysis of five (5) scenarios:

1. Baseline
2. BEB Depot-Only Charging
3. BEB Depot and On-Route Charging
4. FCEB Only
5. Mixed BEB and FCEB

The BEB Depot-Only Charging and FCEB Only scenarios are used as the 'bookends' to help identify potential constraints or risks in scaling to fleetwide adoption of ZEBs that may not be

readily apparent from pilot-bus deployments. At the current state of technology, neither BEBs nor FCEBs have sufficient range to allow for a "one-for-one" replacement of all internal combustion engine buses. Improvements are expected to be made over time; however, there are significant challenges to overcome, and the timeline to achieve the goal is uncertain.

The Baseline scenario assumes that there are no changes to the current technology for bus procurements (e.g. compressed natural gas [CNG], gasoline, diesel, propane) and is used for comparison to the other ZEB transition scenarios. The Baseline scenario includes the scheduled BEB purchases from 2019 to 2022 as previously discussed. The BEB Depot-Only Charging scenario assumes that vehicles are charged only at the depot when they are not in-service. In the BEB Depot-Only scenario, BEBs are only deployed in-service where analysis determines that they can complete specified service blocks (e.g. meet the daily mileage requirements). The BEB Depot-Only Charging scenario meets the requirements of the CARB ICT regulation in that BEBs will be utilized for all service that meet the daily mileage requirements on an single charge.

MTS is unable to increase fleet size to accommodate fleet expansion potentially needed to support a 100% ZEB transition due to space constraints present at the current depots. As a result, the BEB Depot and On-Route Charging scenario was developed to mitigate the need for additional bus purchases and consider another alternative to meet a 100% ZEB fleet. In this scenario, BEBs are charged at the depots when not in-service and on-route where necessary to complete service requirements. The FCEB scenario assumes that FCEBs are utilized where based on analysis they meet daily service requirements. Finally, the Mixed BEB and FCEB scenario utilizes both BEB and FCEBs. The underlying assumption is that neither technology is suitable for 100% of the fleet replacement due to inherent constraints. However using a mixed fleet of BEBs and FCEBs can achieve, or nearly achieve, a 100% zero-emission fleet.

Due to the inherent nature of varying conditions over the period of a long-term fleet transition, it is necessary to establish a number of simplifying assumptions. These assumptions were developed based on discussions between CTE and MTS, and are as follows:

- Transition to a 100% ZEB fleet by 2040 to comply with the CARB ICT regulation
- No change in fleet size throughout the study period except for the addition of two (2) additional BEBs in 2020 support the ZEB Pilot Program and up to twelve (12) articulated vehicles to support service expansion from South Bay in 2022; the addition of the pilot buses was not considered in the transition analysis because the decision to purchase the vehicles was completed after the analysis had been completed
- Due to space constraints at the MTS depots, it is not feasible to increase fleet size to support ZEB deployment
- Current fleet composition (Fiscal Year 2019 Fleet Plan) used for the baseline scenario
- Current planned fleet replacement cycles
- 12-year bus lifespan assumed for future heavy duty transit buses
- 7-year lifespan for cutaway vehicles
- Costs expressed in 2019 dollars with no escalation
- Current battery sizes for BEBs and fuel tank sizes for FCEBs are based on existing specifications for vehicles that have completed Altoona testing
- A 5% improvement in battery capacity (for BEB) and efficiency (FCEB) every two years

- A battery replacement with occur at the mid-life of each heavy-duty transit BEB (6 years)
- A battery replacement and fuel-cell overhaul will occur at the mid-life of each heavy-duty transit FCEB (6 years)

In addition to the uncertainty of technology improvements, there are other risks to consider. Although current BEB range limitations may be remedied over time as a result of advancements in battery energy density and more efficient components, battery degradation may re-introduce range limitations as a risk to an all-BEB fleet over time. In emergency scenarios that require use of BEBs, agencies may face challenges supporting long-range evacuations and providing temporary shelters in support of fire and police operations. Furthermore, fleetwide energy service requirements and power redundancy and resiliency may be difficult to achieve at any given depot in an all-BEB scenario. Higher capital equipment costs and availability of hydrogen may constrain FCEB solutions.

Requirements Analysis

Baseline Data Collection

It is essential to understand the key elements of MTS' service to evaluate the costs associated with a full-ZEB transition. Key data elements of the current MTS service were provided by MTS staff and included the following:

- Fleet composition
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

At the time of the study, the MTS bus fleet totaled 823 vehicles that provide service on nearly 105 fixed routes with additional, complementary, on-demand paratransit service. A breakdown of size and fuel type is shown in **Table 3** and **Table 4**. Bus services operate out of five divisions, all of which include operations, maintenance and fueling functions: Imperial Avenue Division (Imperial Ave), Kearney Mesa Division (Kearney Mesa); South Bay Bus Maintenance Facility (South Bay); East County Bus Maintenance Facility (East County); and Copley Park Maintenance Facility (Copley). MTS' fixed route mini buses and on-demand paratransit buses operate from Copley.

Table 3 - Fleet Breakdown by Division and Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	215	0	0	0	**215**
East County	3	51	24	0	**78**
Kearny Mesa	0	85	0	42	**127**
Imperial Ave	0	111	0	44	**155**
South Bay	0	221	0	27	**248**
Totals	**218**	**468**	**24**	**113**	**823**

Table 4 - Fleet Breakdown by Division and Fuel Type

Division	Fuel Type					Totals
	CNG	Diesel	Propane	Gasoline	Electric	
Copley	0	0	77	138	0	**215**
East County	51	24	0	3	0	**78**
Kearny Mesa	127	0	0	0	0	**127**
Imperial Ave	149	0	0	0	6	**155**
South Bay	248	0	0	0	0	**248**
Totals	**575**	**24**	**77**	**141**	**6**	**823**

Routes and Blocks

MTS' current service consists of 105 routes run on 1189 blocks as detailed in **Table 5**.

Table 5 - Count of Blocks by Division and Bus Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	183	0	0	0	**183**
East County	6	71	33	0	**110**
Kearny Mesa	0	168	0	59	**227**
Imperial Ave	0	189	0	105	**294**
South Bay	19	344	0	12	**375**
Totals	**208**	**772**	**33**	**176**	**1189**

Fuel

MTS' current fuel use was collected and used to estimate energy costs throughout the study period. Cost escalation is not assumed throughout the study. Annual fleet mileage and fuel use is shown in **Table 6**, **Table 7**, and **Table 8**.

Table 6 - Annual Service Miles by Division and Bus Length

Division	Bus Length [ft]				Totals
	22, 29, 32	40	45	60	
Copley	7,317,895	-	-	-	**7,317,895**
East County	35,724	1,696,686	797,770	-	**2,530,180**
Kearny Mesa	-	3,347,629	-	2,394,070	**5,741,699**
Imperial Ave	-	4,221,607	-	1,639,506	**5,861,113**
South Bay	-	8,834,534	-	835,484	**9,670,018**
Totals	**7,353,619**	**18,100,456**	**797,770**	**4,869,060**	**31,120,905**

Table 7 - Annual Diesel, Gasoline, and Propane Fuel Consumption by Division and Bus Length [DGE]

Division	Bus Length [ft]				Totals [DGE]
	22, 29, 32	40	45	60	
Copley	1,341,232	-	-	-	**1,341,232**
East County	4,401	-	-	-	**4,401**
Kearny Mesa	-	-	-	-	**-**
Imperial Ave	-	-	-	-	**-**
South Bay	-	-	-	-	**-**
Totals [DGE]	**1,345,633**	**-**	**-**	**-**	**1,345,633**

Table 8 - Annual CNG Fuel Consumption by Division and Bus Length [Therms]

Division	Bus Length [ft]				Totals [Therms]
	22, 29, 32	40	45	60	
Copley	-	-	-	-	-
East County	-	683,935	-	-	**683,935**
Kearny Mesa	-	1,438,836	-	1,011,100	**2,449,936**
Imperial Ave	-	1,756,221	-	986,864	**2,743,085**
South Bay	-	3,887,292	-	139,509	**4,026,801**
Totals [Therms]	**-**	**7,766,283**	**-**	**2,137,473**	**9,903,756**

Service Assessment

Bus efficiency and range are primarily driven by vehicle specifications; however, it can be impacted by a number of variables including the route profile (i.e., distance, dwell time, acceleration, sustained top speed over distance, average speed, traffic conditions, etc.), topography (i.e., grades), climate (i.e., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another. Therefore, it is critical to determine efficiency and range estimates that are based on an accurate representation of the operating conditions associated with MTS' system to complete the assessment.

The first task in the Service Assessment is to develop route and bus models to run operating simulations for representative MTS routes. CTE uses Autonomie, a powertrain simulation software program developed by Argonne National Labs for the heavy-duty trucking and automotive industry. CTE has modified software parameters specifically for electric buses to assess energy efficiencies, energy consumption, and range projections. CTE collected GPS data from sixteen (16) MTS routes. GPS data includes time, distance, vehicle speed, vehicle acceleration, GPS coordinates, and roadway grade that is used to develop the route model. CTE used component level specifications and the collected route data to develop a baseline performance model by simulating the operation of an electric bus on each route. Ideally it would be best to collect data and model every route in MTS' network; however, this is impractical due to the amount of time and labor this approach would require. Instead, a sampling approach is used where sample routes are identified with respect to topography and operating profile (e.g. average speeds, etc.). The modeling results of the sample routes are then applied to the routes and blocks that share the same characteristics. Routes selected for the analysis are included in **Table 9** below.

Table 9 - Selected Routes for Modeling

Division	Hills/ Low Speed	Hills/High Speed	Flat/Low Speed	Flat/High Speed	Count
Copley		838	84		**2**
East County	936	280	815	864	**4**
Kearny Mesa			237	120	**2**
Imperial Ave	2,10,13		7		**4**
South Bay	3	235	1	905	**4**
Count	**5**	**3**	**5**	**3**	**16**

The route modeling included analysis of several scenarios, varying passenger load, accessory load, and battery degradation, to estimate real-world vehicle performance, fuel efficiency, and range. The data from the routes, as well as the specifications for each of the bus types selected, was used to simulate operation of each type of bus on each type of route. The models were run with varying loads to represent "nominal" and "strenuous" loading conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course

of the day, which places marginal demands on the motor and heating, ventilation, and air conditions (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and either very low or very high temperature (based on agency's latitude) that requires near maximum output of the HVAC system. This Nominal/Strenuous approach offers a range of operating efficiencies to use in estimating average annual energy use (Nominal) or planning minimum service demands (Strenuous). Modeled operating scenarios are included in **Table 10** below.

Table 10 - Modeled Operating Scenarios

Bus Length [ft]	Load Case	Occupants	HVAC Load [kW]	Other Loads [kW]	Total Aux Load [kW]
22-32	Nominal	5	4	2	**6**
22-32	Strenuous	15	12	2	**14**
40	Nominal	9	3	2	**5**
40	Strenuous	39	10	2	**12**
45	Nominal	20	4.5	2	**6.5**
45	Strenuous	40	10	2	**12**
60	Nominal	10	5	3	**8**
60	Strenuous	55	15	3	**18**

Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) associated with each route, bus size and load case. Using the results shown in **Table 11,** system-wide energy use, and costs, are estimated in the subsequent assessments.

Table 11 - Modeling Results Summary

Bus Length [ft]	Route	Nominal Efficiency [kWh/mi]	Strenuous Efficiency [kWh/mi]
40	1	1.9	2.8
	2	2.0	2.9
	3	2.1	3.1
	10	1.9	2.8
	13	1.8	2.6
	120	1.9	2.7
	237	2.1	2.7
	815	1.9	2.9
	864	1.8	2.7
	905	2.0	2.6
	936	2.0	2.9
45	280	2.7	3.0
60	7	3.2	4.5
	235	2.9	3.5
	905	2.8	3.6
22-32	84	1.4	2.1

Using vehicle performance predicted from route modeling, combined with educated assumptions for battery electric and fuel cell technology, CTE analyzed the expected performance and range needed on every block in MTS' network and assessed the "achievability" of each block by BEBs and FCEBs over time, as range improves. This assessment analyzes the feasibility of maintaining the MTS' current level of service with BEB and FCEB vehicles and does not plan for any expansions. The analysis focuses on bus endurance and range limitations to determine if the ZEBs could meet the service requirements of the blocks throughout the transition period. The energy needed to complete a block is compared to the available energy for the respective bus type that is planned for the block to determine if a BEB or FCEB can successfully operate on that block. This assessment also determines a timeline for when blocks become for eligible for zero-emission vehicles as technology improves. This information is used to then inform ZEB procurements in the Fleet Assessment.

Research suggests that battery density for electric vehicles has improved by an average of 5% each year.[1] For the purposes of this study, considering the extended period of a complete fleet transition (e.g. through 2040), CTE assumes a more conservative 5% improvement every two years. If the trend continues, it is expected that buses may continue to improve their ability to carry more energy without a weight penalty or reduction in passenger capacity. Over time, BEBs are expected to approach the capability to replace all of an agency's fossil-fuel buses one-for-one. FCEBs do not have the same range constraints as BEBs. Typically, FCEBs can more readily serve an agency's current blocks on a one-to-one basis with internal combustion engine buses; however, costs of hydrogen fuel and bus capital costs can create higher barriers to entry. There is also a significant amount of research going towards fuel cell technologies. We assume 5% bi-annual improvement in hydrogen tank size as a proxy for other component improvements such as battery capacity, motor efficiency, fuel cell efficiency, etc.

The block analysis, with the assumption of 5% improvement in battery capacity or improvement in hydrogen storage capacity every other year, is used to determine the timeline for when routes and blocks become achievable for BEBs and FCEBs, respectively, to replace fossil-fuel buses one-for-one. This information is used to then inform ZEB procurements in the Fleet Assessment. The results from the block analysis are used to determine when/if a full transition to BEBs or FCEBs may be feasible. Results from this analysis are also used to determine the specific energy requirements and develop the estimated costs to operate the ZEBs in the Fuel Assessment.

Results from the block analysis that indicate the yearly block achievability by bus length throughout the transition period for BEBs and FCEBs are included in **Figure 3** and **Figure 4** below, respectively.

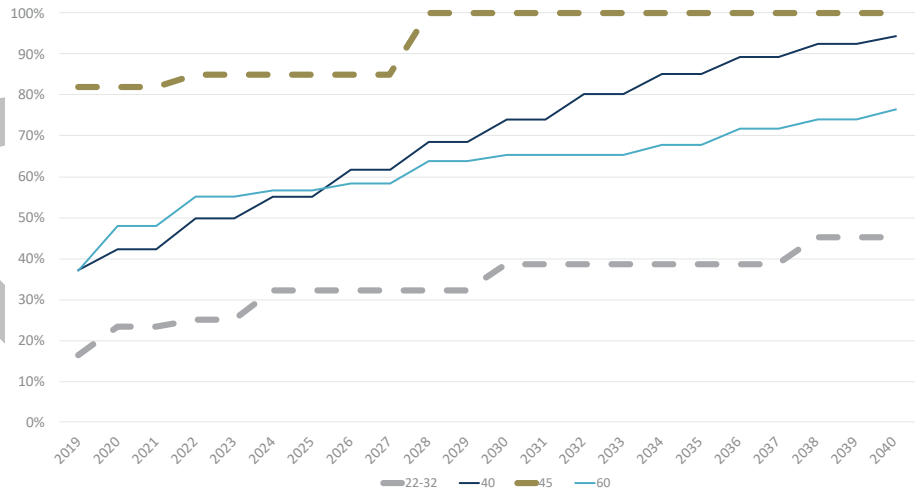


Figure 3 – BEB Block Achievability Percentage by Length

[1] U.S. Department of Energy; LONG-RANGE, LOW-COST ELECTRIC VEHICLES ENABLED BY ROBUST ENERGY STORAGE, MRS Energy & Sustainability, Volume 2, Wednesday, September 9, 2015; https://arpa-e.energy.gov/?q=publications/long-range-low-cost-electric-vehicles-enabled-robust-energy-storage

The BEB achievability in **Figure 3** shows that by 2040, it is expected that nearly all 40' and 45' MTS blocks can be completed by BEBs. However, in 2040, 60' and cutaway blocks (22'-32') struggle, with only approximately 76% and 45% able to be completed by BEBs, respectively. Please note that the dashed lines indicate that, at the time of the study, there are no 45'or cutaway BEBs available on the market that have completed Altoona testing and the timeline for these to be available is uncertain.

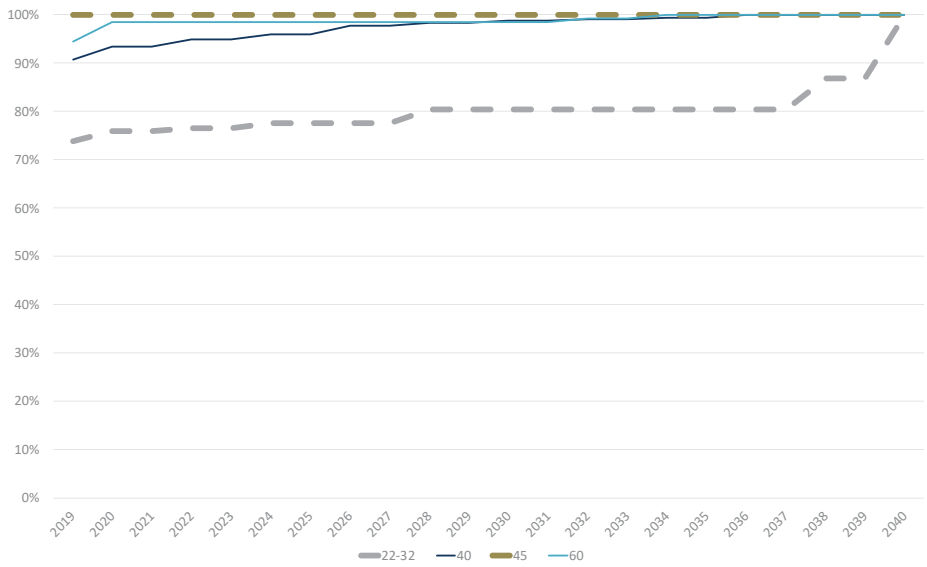


Figure 4 – FCEB Block Achievability Percentage by Bus Length

The FCEB achievability in **Figure 4** shows that by 2040, it is expected that 100% of MTS blocks can be completed by FCEBs. It is predicted that with the exception of cutaway buses (22'-32'), all other FCEB sizes can complete 90% or greater of MTS blocks starting in 2020. Please note that the dashed lines indicate that, at the time of the study, there are no 45'or cutaway BEBs available on the market that have completed Altoona testing and the timeline for these to be available is uncertain.

While routes and block schedules are unlikely to remain the same over the course of the transition period, these projections assume the blocks will retain a similar structure to what is in place today. Despite changes over time, this analysis assumes blocks will maintain a similar distribution of distance, relative speeds, and elevation changes by covering similar locations within the city and using similar roads to get to these destinations. This core assumption affects energy use estimates as well as block achievability in each year.

It should be noted that BEB range is negatively impacted by battery degradation over time. A BEB may be placed in service on a given block with beginning-of-life batteries; however, it may not be able to complete the entire block at some point in the future before the batteries at are end-of-life (typically considered 80% of available service energy). Conceptually, older buses can be moved to shorter, less demanding blocks and newer buses can be assigned to longer, more demanding blocks. MTS can rotate the fleet to meet the demand assuming there is a steady procurement of BEBs each year to match service requirements. This could also be said for FCEBs, although the impact of degradation is assumed to be less.

Fleet Assessment

The goal of the Fleet Assessment is to determine the type and quantity of ZEBs, as well as the schedule and cost to transition the fleet to zero-emissions. Results from the Service Assessment are integrated with MTS' current fleet replacement plan and purchase schedule to produce two main outputs: a projected bus replacement timeline through the end of the projection period, and the associated total capital costs.

While the industry is rapidly changing, there are still tradeoffs for each zero-emission technology, primarily between range, operational impact, capital costs and operating costs. For this reason, a mixed fleet scenario consisting of multiple ZEB types in addition to scenarios that only consider a single technology are considered.

Cost Assumptions

CTE and MTS developed cost assumptions for this analysis for each bus length and technology type (e.g. CNG, gasoline, propane, BEB, FCEB). Key assumptions for bus costs for the MTS Transition Study are as follows:

- Bus costs are based on MTS procurements, industry quotes, and the State of California statewide procurement contract for BEBs and FCEBs executed in 2019
- Bus costs are inclusive of configurable options and taxes (7.75%)
- Bus costs are estimated where buses of a given configuration are not commercially available or where no quotes were available
- Future bus costs are based on year 2019 since the is currently no basis for increases or decreases

Conventional wisdom dictates that the costs of BEBs will decrease over time due to higher production volume and competition from new vendors entering the market. While initially this was true, costs appear to have leveled out in recent years. However, it should be also noted that vendors have added more battery storage over the same time period without increasing base costs.

FCEB prices are expected to decrease over time as vehicle orders increase; however, CTE does not currently have an adequate basis to reduce the costs over time for the purchase of FCEBs. Note that there is a program under development, known as the 100-Bus Fuel Cell Electric Bus Initiative, where multiple vendors have committed to a base price of $850k for a 40-foot FCEB based on a minimum bus order of 100 vehicles; however, the future of this initiative is uncertain. **Table 12** provides estimated bus costs used in the analysis.

Table 12 - Fleet Assessment Cost Assumptions

Length [ft]	CNG	Diesel	Gasoline	Propane	Electric	Hydrogen
22' Cutaway	-	-	$80,000	$110,000	$250,000	*$375,000*
29' Cutaway	-	-	$150,000	-	*$325,000*	*$487,000*
32' Cutaway	-	-	-	$177,000	*$325,000*	*$487,500*
40'	$549,962	-	-	-	$964,144	$1,147,515
45'	$800,000	$700,000	-	-	*$950,000*	*$1,400,000*
60'	$1,003,365	-	-	-	$1,374,333	$1,631,264

Note: Italic text indicates that the cost was an estimate based on similar vehicle costs

Baseline

The Baseline scenario is used for comparative purposes only. It assumes no changes to MTS' current fleet composition throughout the life of the study. The Baseline scenario helps create context for incremental costs incurred or benefits accrued by transitioning the fleet to zero-emission.

Figure 5 provides the number of each bus type that is purchased each year to maintain MTS' current fleet composition through 2040. The number of buses purchased each year is based on the vehicle replacement schedule (Fiscal Year 2019) provided by MTS.

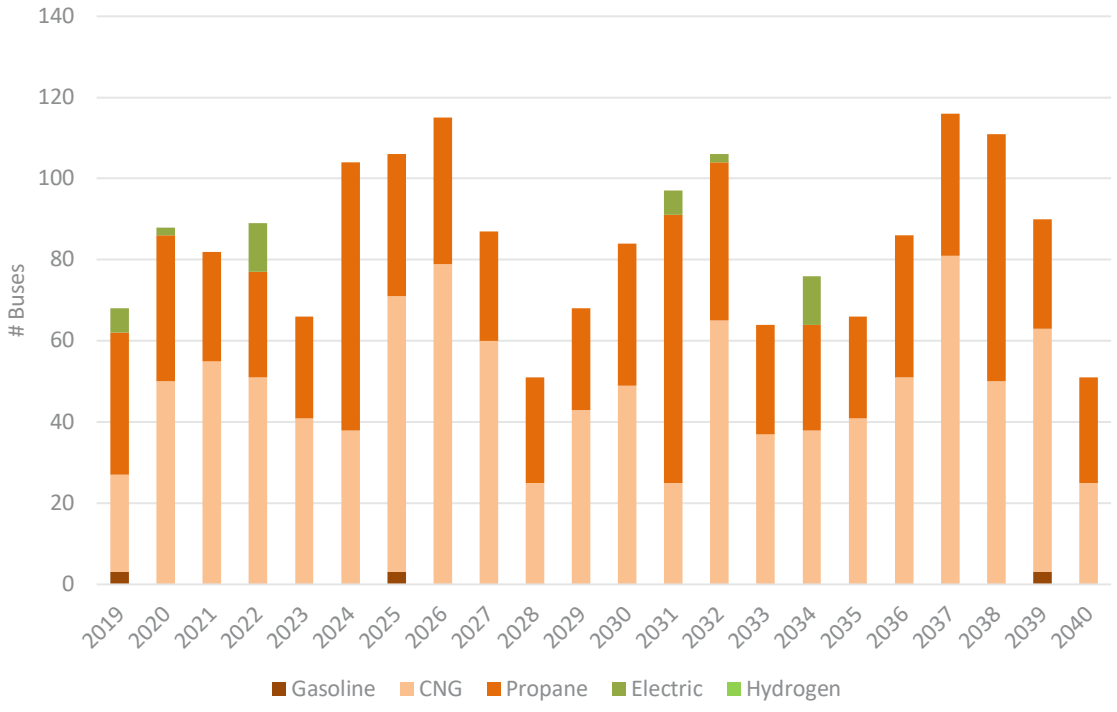


Figure 5 - Annual Vehicle Purchases, Baseline

Figure 6 depicts the annual baseline fleet composition through 2040. MTS phases out gasoline vehicles for propane from 2019 to 2021, and adds twelve (12) BEBs in 2022.

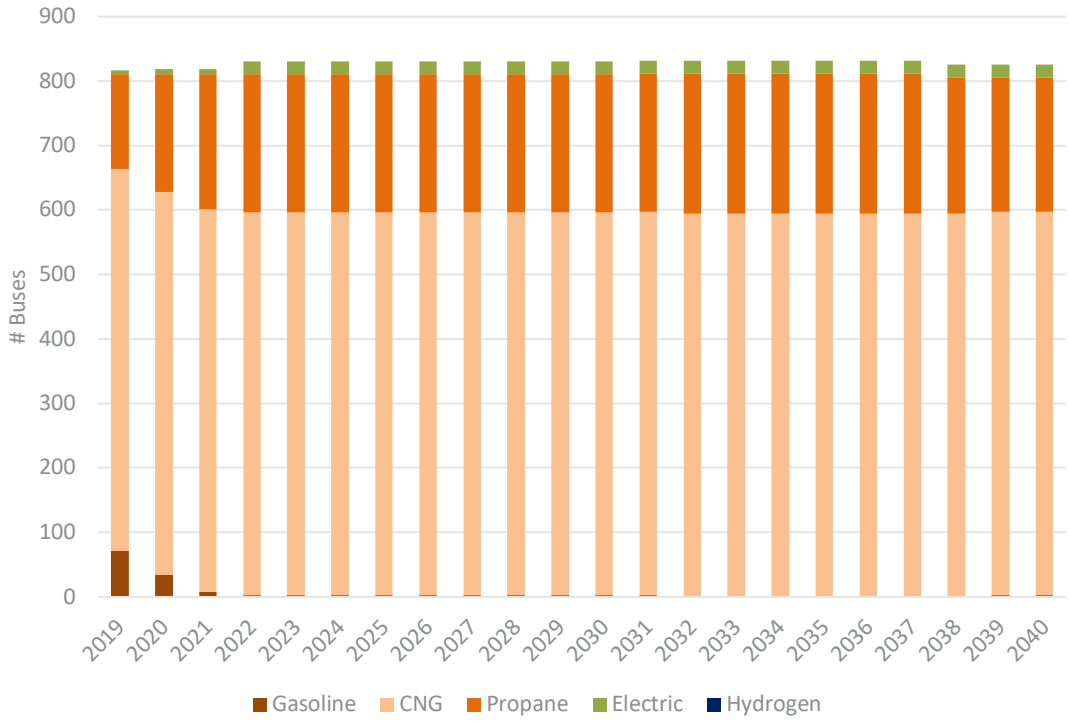


Figure 6 - Annual Fleet Composition, Baseline

Figure 7 shows the annual capital costs based on the purchase schedule and bus cost assumptions for the Baseline Scenario. Total bus purchases range from approximately $20 to $60 million each year.

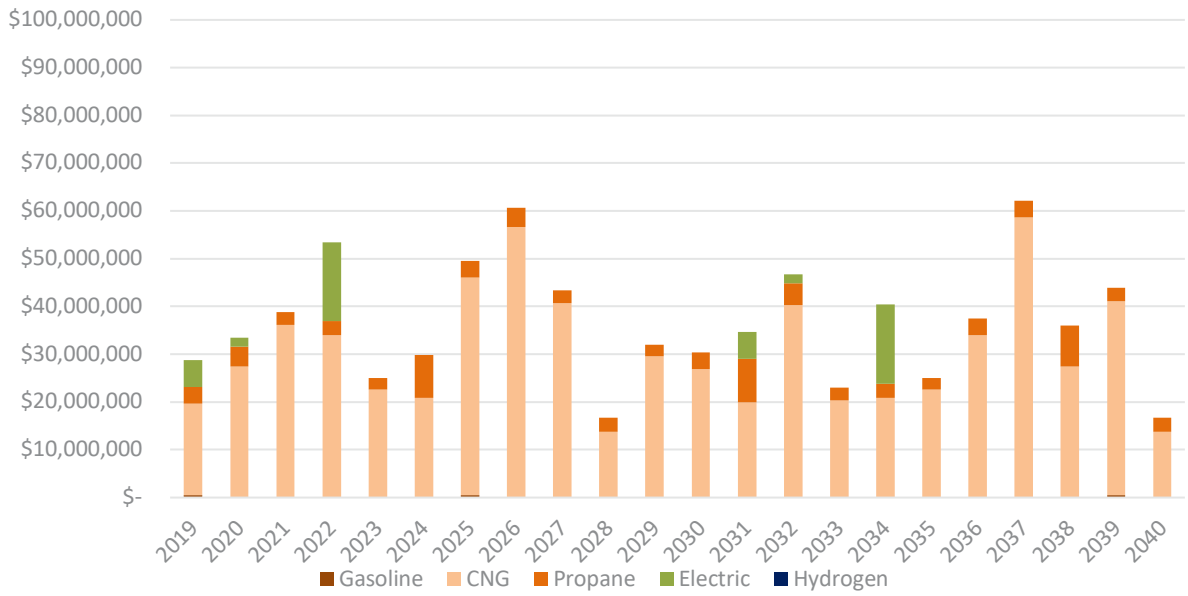


Figure 7 - Annual Capital Costs, Baseline

BEB Depot-Only Charging

The BEB Depot-Only Charging scenario assumes that depot-charged BEBs are used wherever possible; however, there may be instances where a depot-charged BEB cannot replace a internal combustion engine vehicle one-for-one due to insufficient range. As MTS has space constraints that limit their ability to increase the number of vehicles, replacement of a single fossil-fuel bus with multiple BEBs is not feasible. As a result, If vehicles cannot be replaced with a BEB because of the inability to complete the blocks, the vehicles are replaced with a internal combustion engine vehicle of the existing fuel type. **Figure 8** provides the number of each bus type that is purchased each year through 2040.

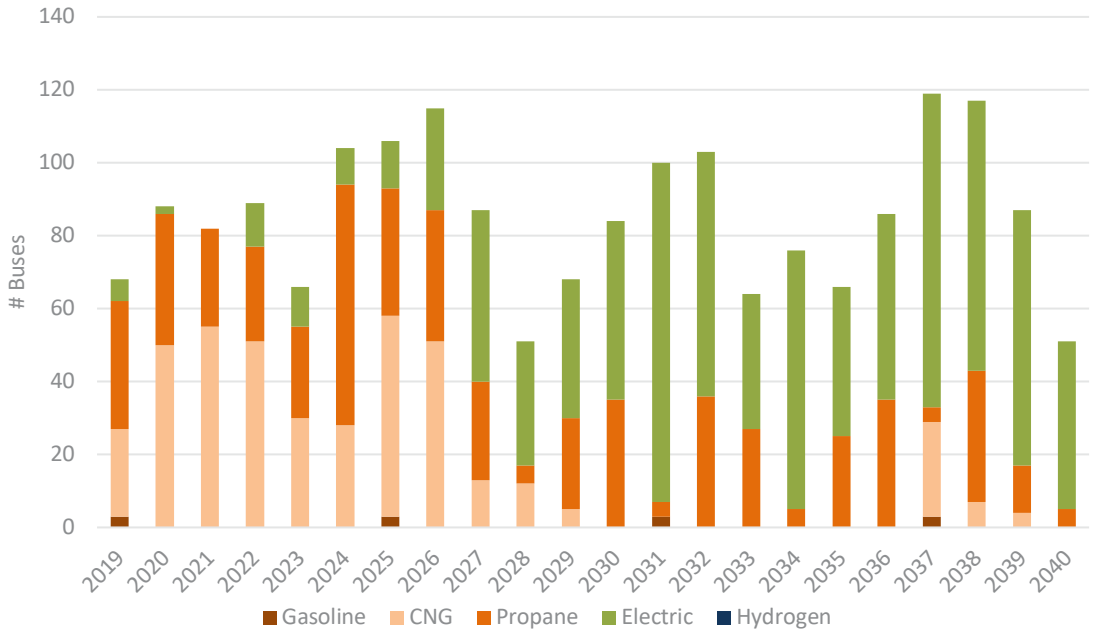


Figure 8 – Projected Vehicle Purchases, BEB Depot-Only Scenario

Figure 9 depicts the annual baseline fleet composition through 2040. MTS phases out gasoline vehicles for propane from 2019 to 2021, and adds twelve (12) BEBs in 2022, but the fleet remains unchanged thereafter. Note that by 2040, a total of approximately 77% of MTS fleet consists of BEBs. The fleet is unable to transition to 100% ZEB using depot-charged BEBs due to range limitations, primarily with the 60' and cutaway vehicles.

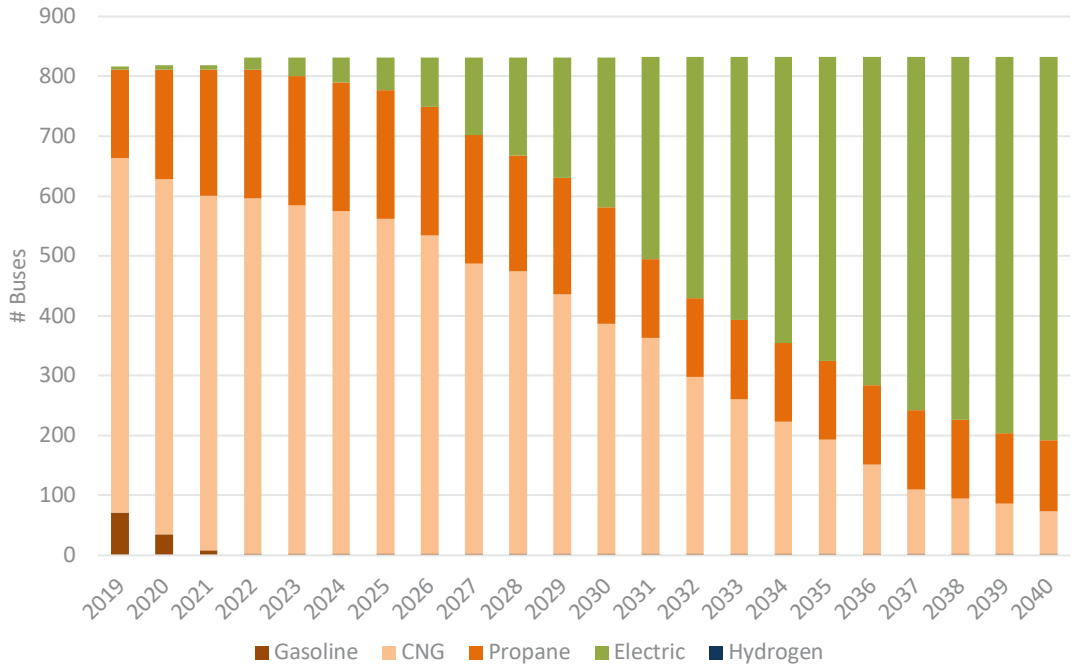


Figure 9 – Annual Fleet Composition, BEB Depot-Only Scenario

Figure 10 shows the annual bus cost for each type of bus purchased in a given year for the BEB Depot-Only Charging Scenario.

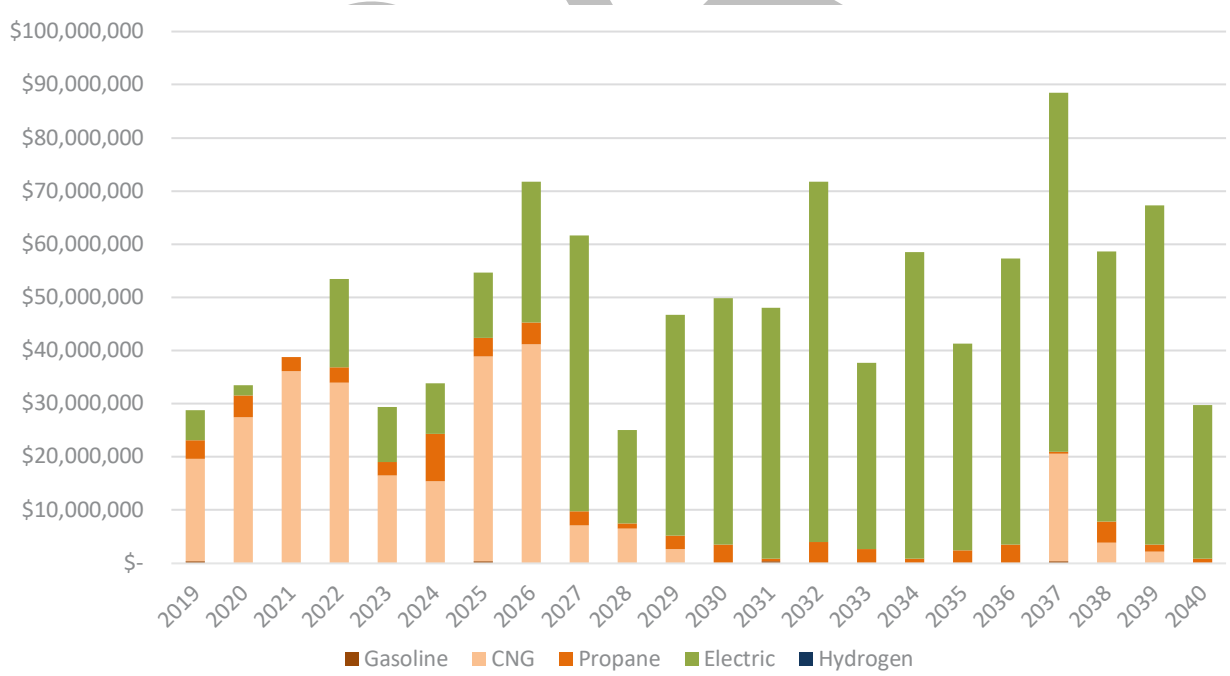


Figure 10 – Annual Capital Costs, BEB Depot-Only Scenario

BEB Depot and On-Route Charging

The BEB Depot and On-Route Charging scenario builds off of the analysis completed for the BEB Depot Only Charging scenario. Because bus replacements are based on block achievability found in the Service Assessment, there may be instances where block coverage is insufficient and depot-charged BEBs cannot meet service requirements. In that case, on-route charged BEBs can fill the gap. On-route charging allows an agency to add energy to buses while in service, providing the additional energy necessary to complete a block, without having to travel the extra distance and take the extra time to charge at a depot. Because MTS operates their Paratransit service as on-demand with no set routes or service area, the use of on-route charging is not feasible for these vehicles because they are unable to predict where a vehicle will be at a specific time of day when it needs to charge.

The figures below show projected purchases, annual fleet composition, and annual total capital costs for the BEB Depot and On-Route Charging scenario. By 2040, the addition of on-route charging allows MTS to replace approximately 84% of the fleet with BEBs. The fleet is unable to transition to 100% ZEB using depot-charged BEBs due primarily to the inability to operate the Paratransit fleet (cutaway/minibus) using on-route charging.

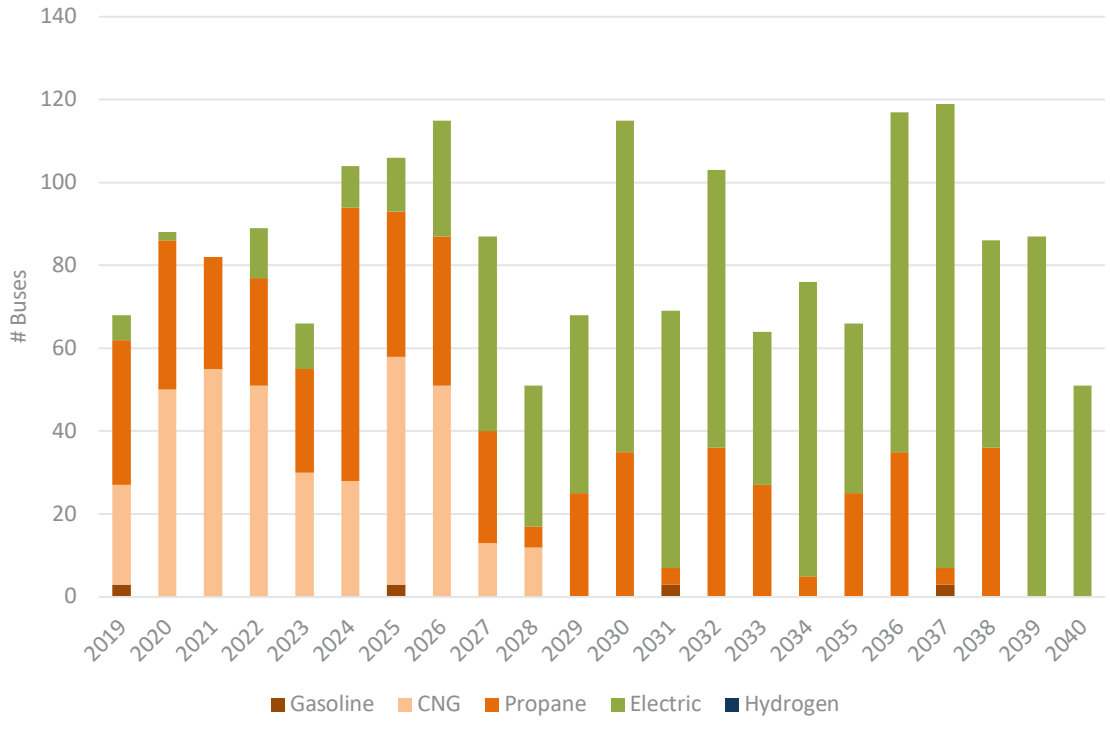


Figure 11 – Projected Vehicle Purchases, BEB Depot and On-Route Scenario

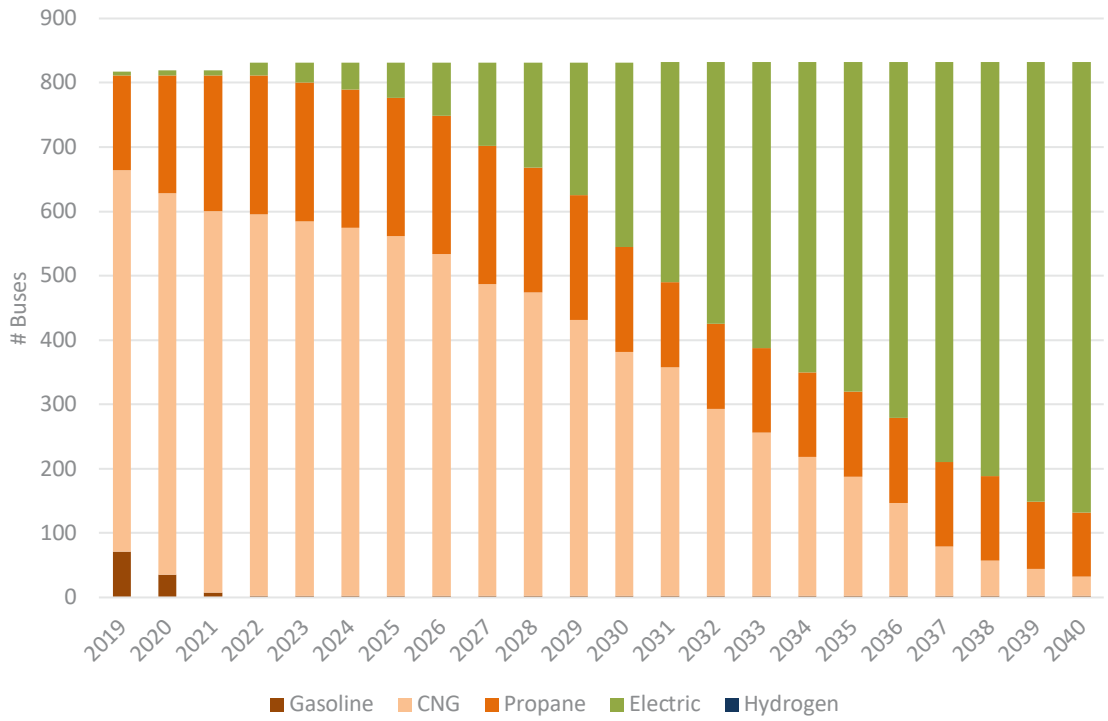


Figure 12 – Annual Fleet Composition, BEB Depot and On-Route Scenario

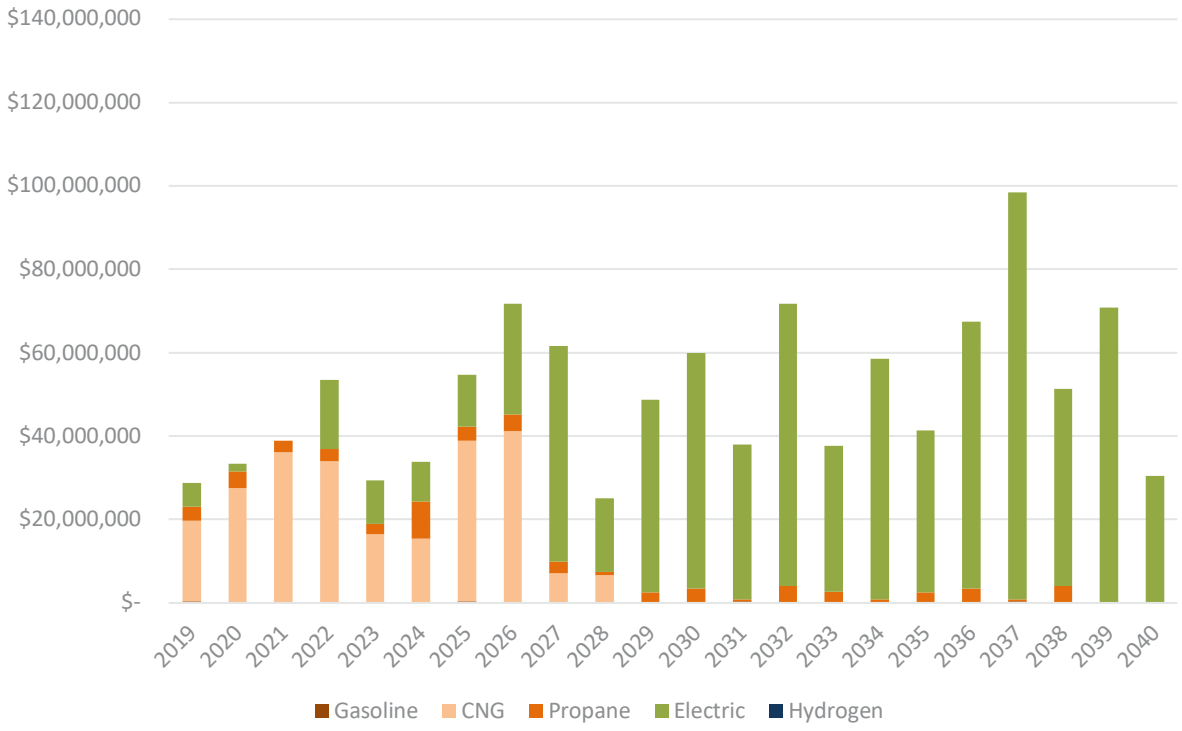


Figure 13 – Annual Capital Costs, BEB Depot and On-Route Scenario

FCEB Only

As discussed previously, FCEBs do not have the same range constraints as BEBs. Based on the analysis completed, by the end of the transition period, it is estimated that all of MTS blocks can be served by a FCEB on a one-for-one replacement basis (see **Figure 4**). There are significant assumptions that commercially available, Altoona tested 45' and cutaway FCEBs will be available during the transition period as well as improvements in range as previously discussed. The figures below show projected purchases, annual fleet composition and annual total capital costs for the FCEB Only scenario. By 2040, MTS is able to replace approximately 95% of its fleet with FCEBs. The remaining 5% of vehicles will be replaced with FCEBs when they reach their useful life after 2040. There is a lag between when FCEB technology can meet block energy requirements and when a vehicle is replaced due to the vehicle replacement schedule. Note that the hydrogen powered cutaway vehicles are differentiated from heavy-duty FCEBs due to the uncertainty associated with production of these vehicles in the future.

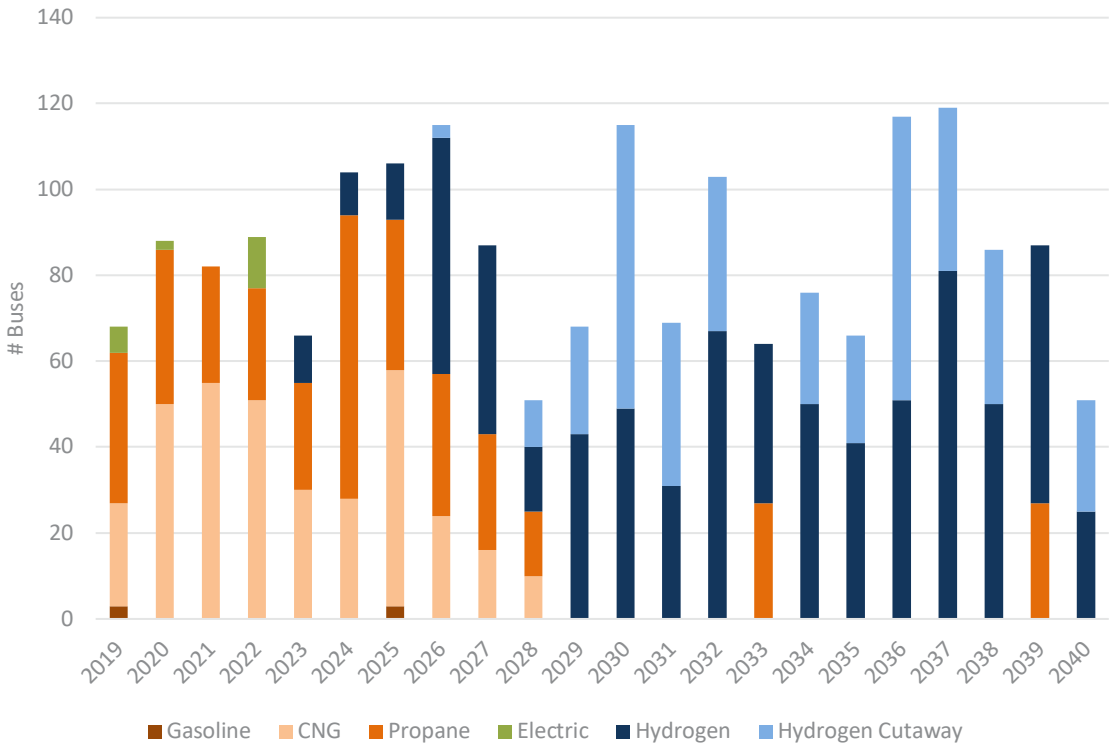


Figure 14 - Projected Vehicle Purchases, FCEB Only Scenario

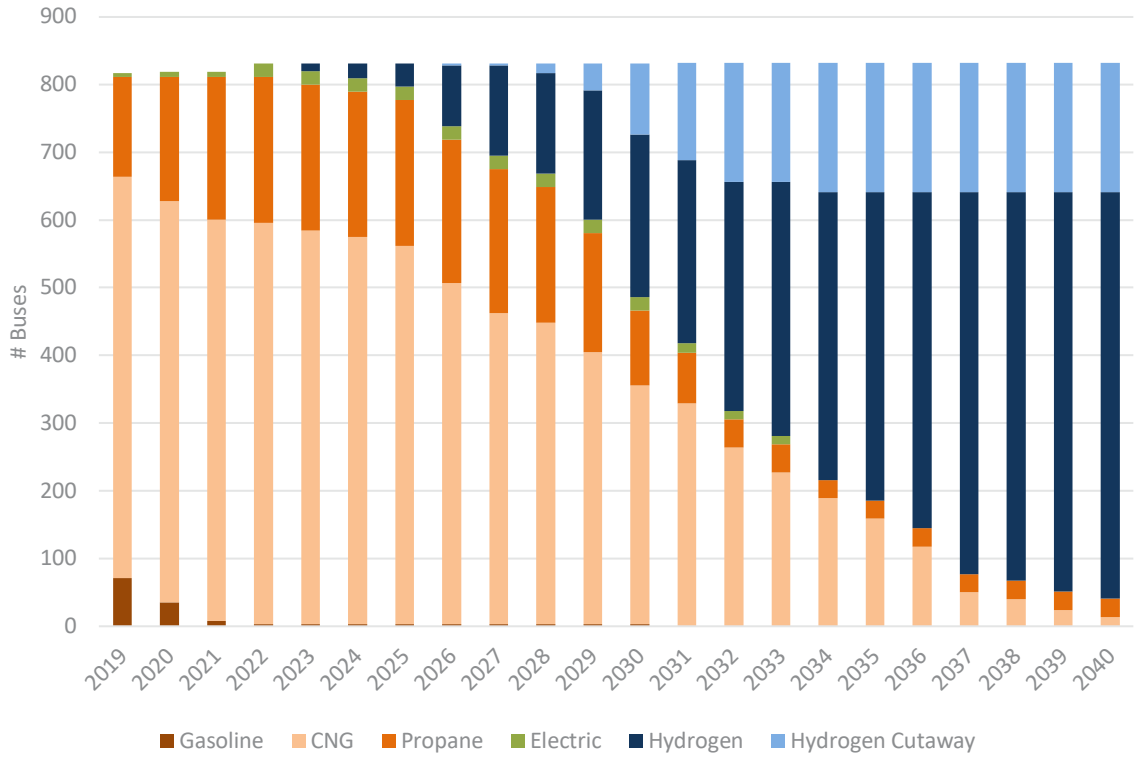


Figure 15 – Annual Fleet Composition, FCEB Only Scenario

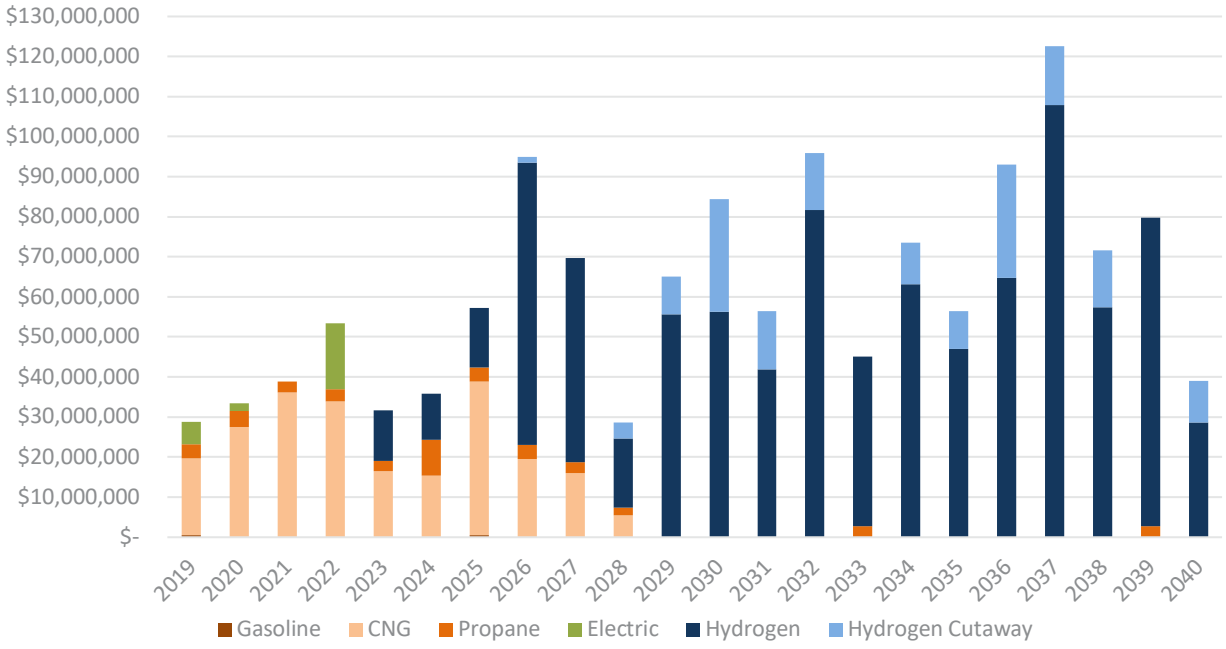


Figure 16 – Annual Capital Costs, FCEB Only Scenario

Mixed BEB and FCEB

In the Mixed BEB and FCEB scenario, depot-charged BEBs are utilized where they can replace fossil-fuel vehicles on a one-for-one basis. Since FCEBs have a greater range, they are used on the longer blocks and in Paratransit service where BEBs are not feasible. By the end of the transition period, any instance where block coverage is insufficient, a FCEB is used to replace MTS' original vehicle type. The figures below show projected purchases, annual fleet composition, and annual total capital costs for the Mixed BEB and FCEB fleet. By 2040, MTS is able to replace approximately 95% of its fleet with BEB and FCEBs. As in the FCEB Only scenario, the remaining 5% of vehicles will be replaced with FCEBs when they reach their useful life after 2040. There is a lag between when ZEB technology can meet block energy requirements and when a vehicle is replaced due to the vehicle replacement schedule. Note that the hydrogen powered cutaway vehicles are differentiated from heavy-duty FCEBs due to the uncertainty associated with production of these vehicles in the future.

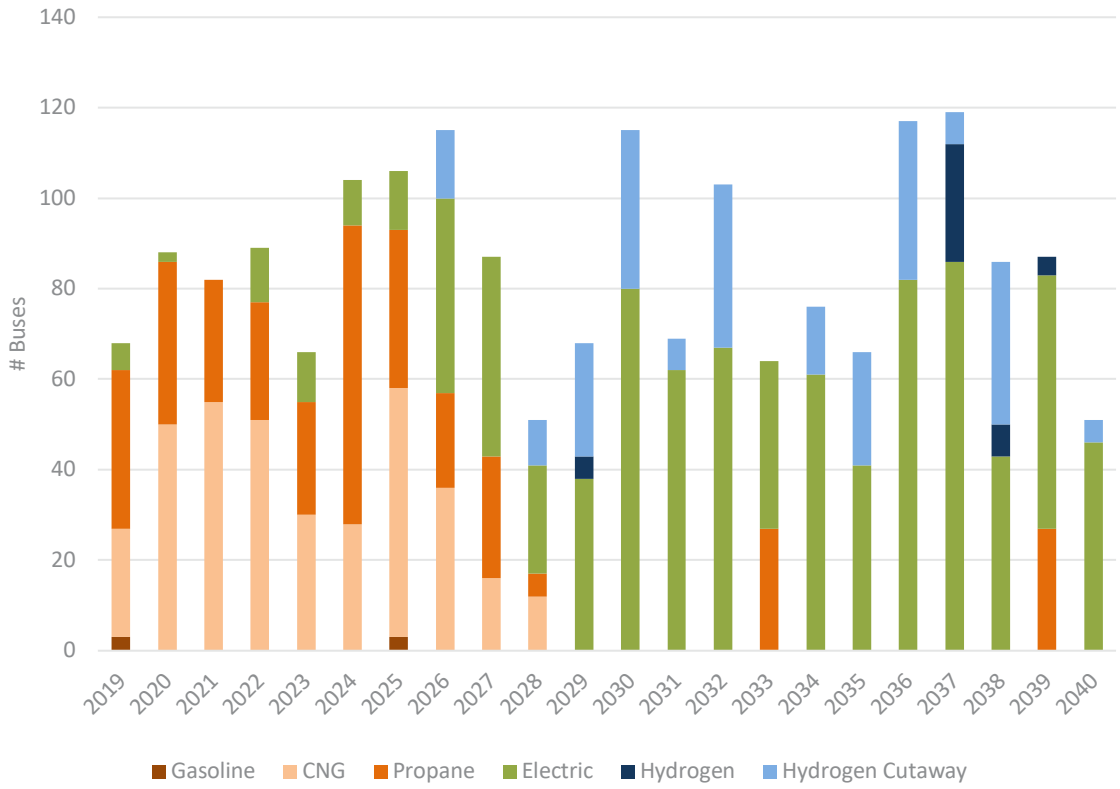


Figure 17 – Projected Vehicle Purchases, Mixed Scenario

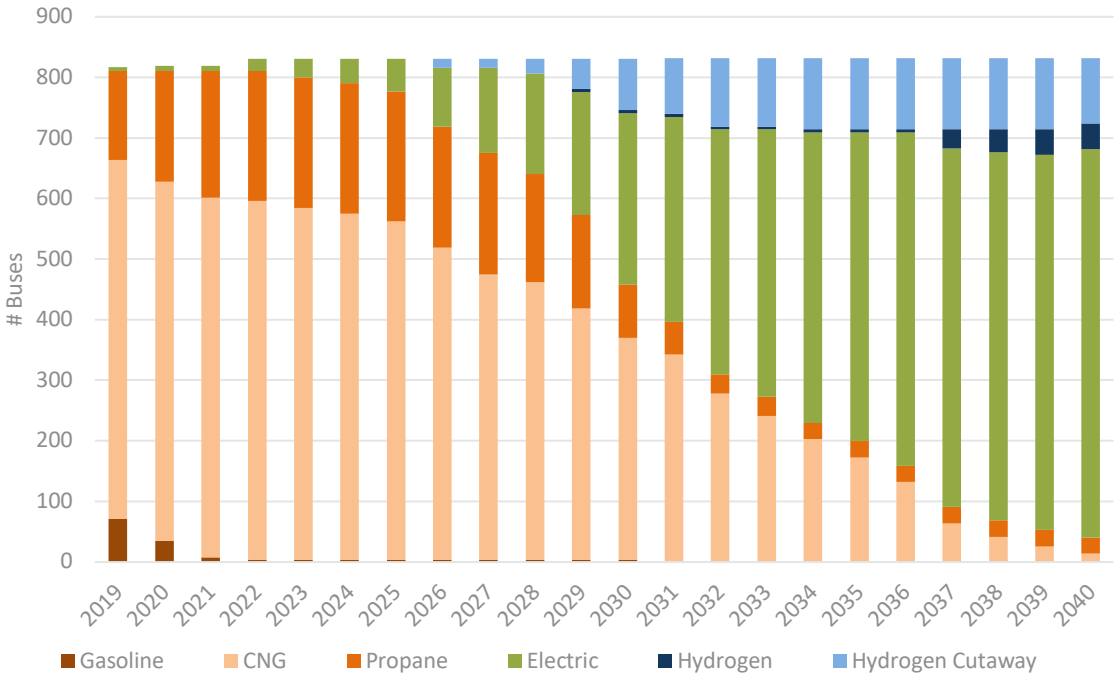


Figure 18 – Annual Fleet Composition, Mixed Scenario

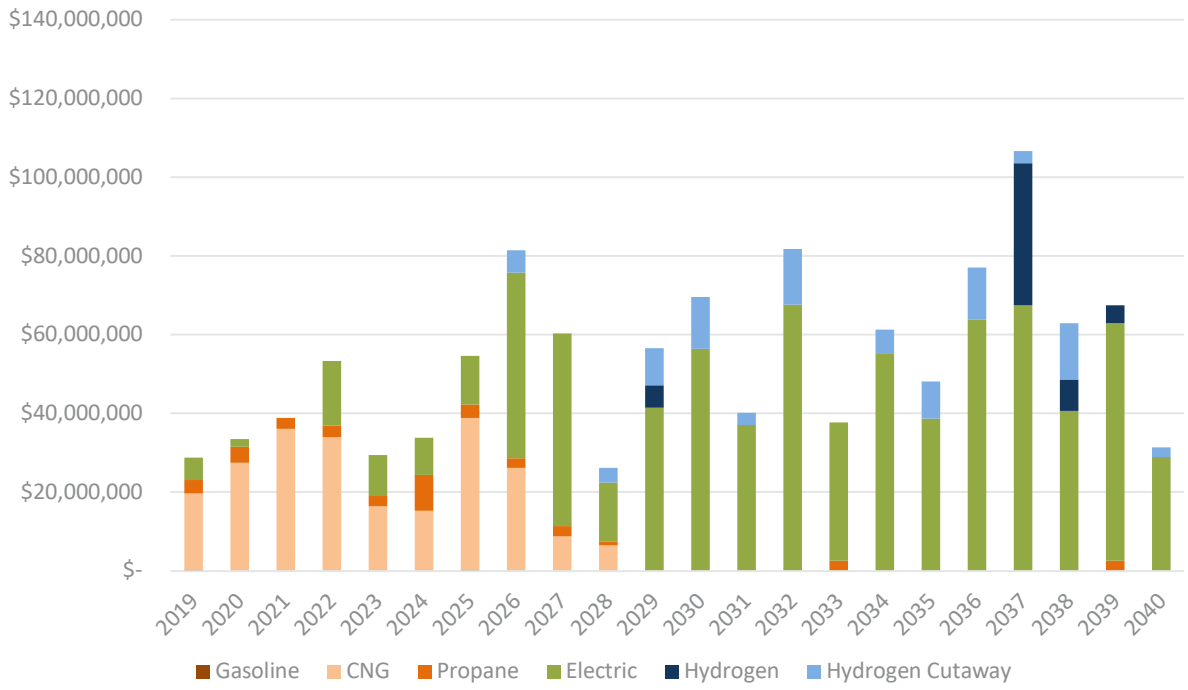


Figure 19 – Annual Capital Costs, Mixed Scenario

Fleet Assessment Cost Comparison

As discussed previously, the transition and fleet composition schedules were used to develop the total capital cost for vehicle purchases through the transition period. **Figure 20** shows the cumulative fleet purchase costs for each scenario.

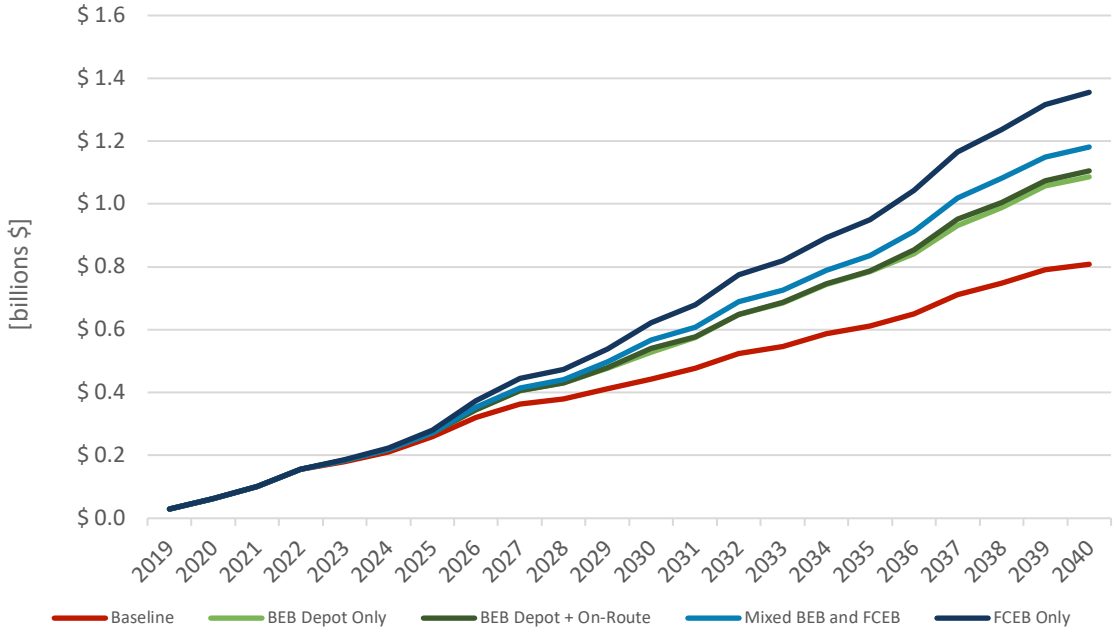


Figure 20 – Total Capital Costs, Fleet Assessment

By the end of the transition period, the cumulative vehicle costs vary substantially according to the technology selected as does the percentage of the fleet that can be transitioned to zero-emission by 2040. **Table 13** provides the combined total costs for each transition scenario, the percentage increase in cost above the baseline scenario, and the percentage of ZEBs present in the fleet in 2040 for the scenario.

Table 13 - Total Capital Costs, Fleet Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ 808,294,000	----	2%
BEB Depot Only	$ 1,086,465,000	34%	77%
BEB Depot + On-Route	$ 1,105467,000	37%	84%
FCEB Only	$ 1,355,484,000	68%	95%
Mixed BEB and FCEB	$ 1,181,414,000	46%	95%

Fuel Assessment

Using ZEB performance data from the bus modeling and route simulation, CTE analyzed the expected performance on each block in MTS' service network to calculate daily energy requirements. The five projection scenarios from the Fleet Assessment are used to estimate associated fuel and energy costs unique to each fleet projection throughout the study life. This assessment calculates energy costs using 2019 prices. The Fuel Assessment estimates quantities and costs for MTS' current and future fossil-fuel vehicles as well as electrical energy and hydrogen fuel quantities and costs for the future BEB and FCEBs projected in each scenario.

The terms "fuel" and "energy" are used interchangeably in this assessment, as ZEB technologies do not always require traditional liquid fuel. For clarity, in the case of BEBs, "fuel" is electricity and costs include energy, demand and other utility charges. FCEBs are more similar to internal combustion engine vehicles as they are fueled by a gaseous or liquid hydrogen fuel. In addition to the cost of the fuel itself, however, there are additional operational costs associated with the hydrogen fueling station that must be considered. Operation and maintenance costs to maintain fueling infrastructure for both BEBs and FCEBs are built into the Fuel Assessment. Fuel cost estimates are based on the assumptions shown in **Table 14** below.

Table 14 – Fuel Cost Assumptions

Fuel	Cost	Source
Gasoline	$2.73/gal	MTS contracted rate
CNG	$0.85/DGE	MTS contracted rate
Hydrogen (trucked)	$8.10/kg	Average of contracted rates for multiple CA transit agencies
Electricity	Varies	SDG&E AL-TOU and EV-HP Tariff Schedules

The primary source of energy for a BEB comes from the local electrical grid. Utility companies typically charge separate rates for total electrical energy used and the maximum electrical demand on a monthly basis. As more buses, and chargers, are added to a system, both the energy used and the demand increase. Rates also vary throughout the year and throughout the day; this makes costs highly variable. Costs not only depend on seasonal differences like temperature, but also the time of day buses are charged.

Table 15 shows the current San Diego Gas & Electric (SDG&E) rate schedule used in the Fleet Assessment to estimate electrical costs for BEBs. MTS' energy rates are Direct Access, meaning the energy is purchased outside the utility at a more competitive rate and supplied through SDG&E. These rates are averaged from monthly rates and are a summarized version of SDG&E's full schedule.

Table 15 – SDGE&E Rate Schedule

	Fee Type	Unit	AL-TOU2	A6-TOU	A6-TOU
Demand Levels			0 - 499 kW	500 - 1200 kW	> 1200 kW
Service Type			Secondary	Primary	Substation
Customer Charge	Service Fee	per month	$ 310.34	$ 59.77	$ 30,722.49
Demand Charge	Non-Coincident Transmission & Distribution	per kW	$ 24.23	$ 23.66	$ 15.46
	Annual Peak Avg: Transmission & Distribution	per kW	$ 17.25	$ 17.11	$ 1.84
Energy Rates	Annual Super Off-Peak Avg	per kWh	$ 0.09892	$ 0.09865	$ 0.09865
	Annual Off-Peak Avg	per kWh	$ 0.11637	$ 0.11593	$ 0.11593
	Annual Peak Avg	per kWh	$ 0.13311	$ 0.13256	$ 0.13256

Charging Analysis

To accurately estimate energy use and electrical demand, and subsequent costs, due to BEB charging, charging was simulated at each depot, for each year of the transition. Electrical energy and demand were estimated based on current block schedules and BEB purchase projections and apply SDG&E tariff schedules to calculate an annual cost of charging. This annual cost is evaluated for each year of the study and at each depot to obtain a total BEB depot charging cost for the transition. This estimate is used as the total "fuel" cost for BEB depot charging in the subsequent assessment scenarios and it is incremental to on-route charging costs, hydrogen fuel costs and internal combustion engine costs.

The local utility, SDG&E, calculates total energy costs, measured per kWh, using three different Time-of-Use rates (TOU), as was shown in **Table 15.** Ideally, buses would all charge in the least expensive, Super Off-Peak time for the lowest overall cost, but because MTS is limited by space and by the available charge window to meet schedule requirements, this is not possible. To reduce overall energy and demand costs, charge management was modeled to optimize charging for MTS' pull-out requirements.

Charge management reduces electricity costs by optimizing energy use (kWh) and maximum demand (kW) to occur during cheaper time windows. By managing charging, the total annual costs, using South Bay in 2040 as an example, are reduced by approximately $2.65 million, or by approximate 31%, as shown in **Table 16** below.

Table 16 - Charging Costs, South Bay, 2040

Fees	Annual Cost Unmanaged	Annual Cost Managed
Customer Charge	$ 717	$ 717
Noncoincident Demand	$ 3,288,020	$ 3,185,582
Demand Charge	$ 2,377,075	-
Demand Subscription	-	-
Energy	$ 2,749,706	$ 2,583,234
Total	**$ 8,415,519**	**$ 5,769,533**

Optimizing Energy Use

Figure 21 shows each weekday block's status at South Bay over a single day in 2040 (a weekday block is identical for each day of the week). Grey indicates the bus is in service; blue indicates setup time and delay; and gold indicates charging time. This unmanaged scenario assumes a standard 30-minute delay between pull-in and charge start. There are a significant number of charges occurring during On-Peak from 4pm to 9pm. This charging method incurs an annual total energy cost of approximately $2.75 million, shown in **Table 16**.

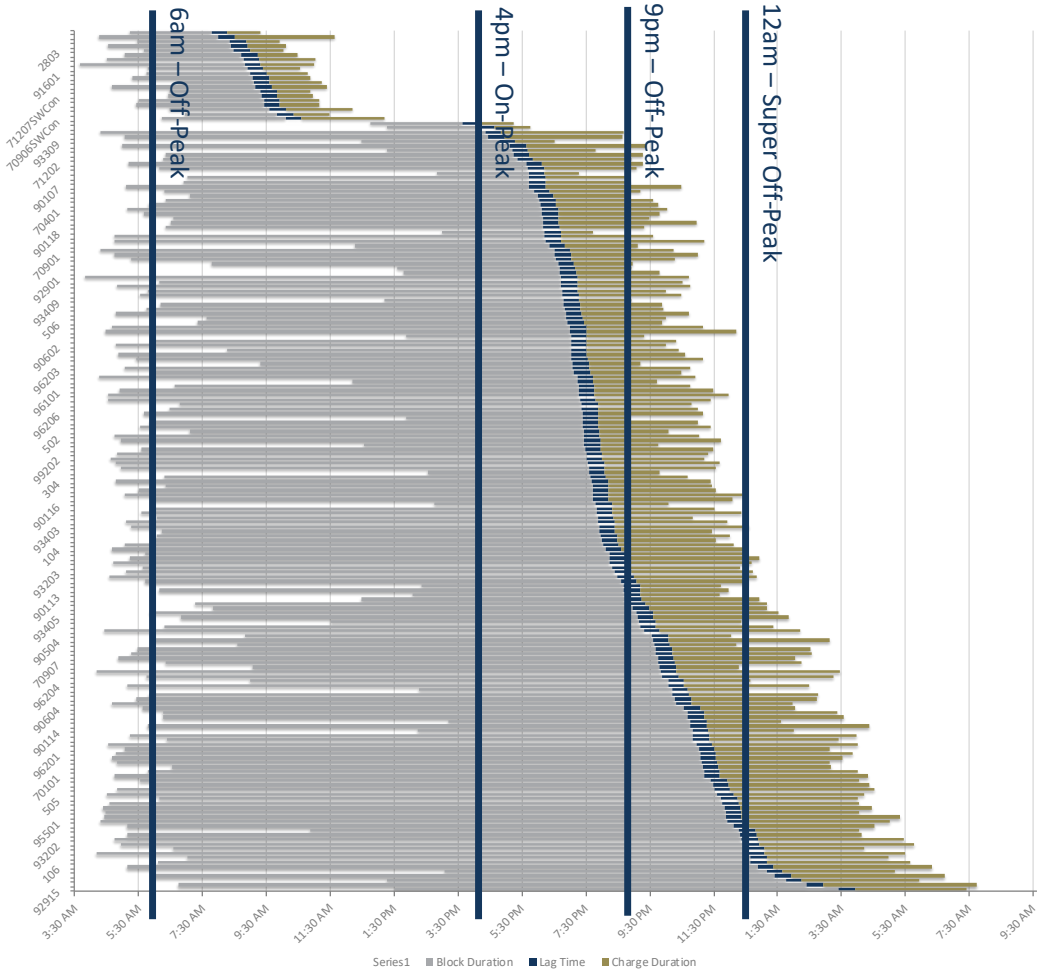


Figure 21 – Unmanaged Charging, South Bay, Weekday, 2040

Figure 22 shows the effect of actively managing charging on the same day shown in **Figure 21**. All the blocks that pull in between 4pm and 9pm now have extra delay time added so that the On-Peak time of use rate is avoided. This modification results in an energy cost savings of approximately $166,000 per year over the unmanaged case (**Table 16**).

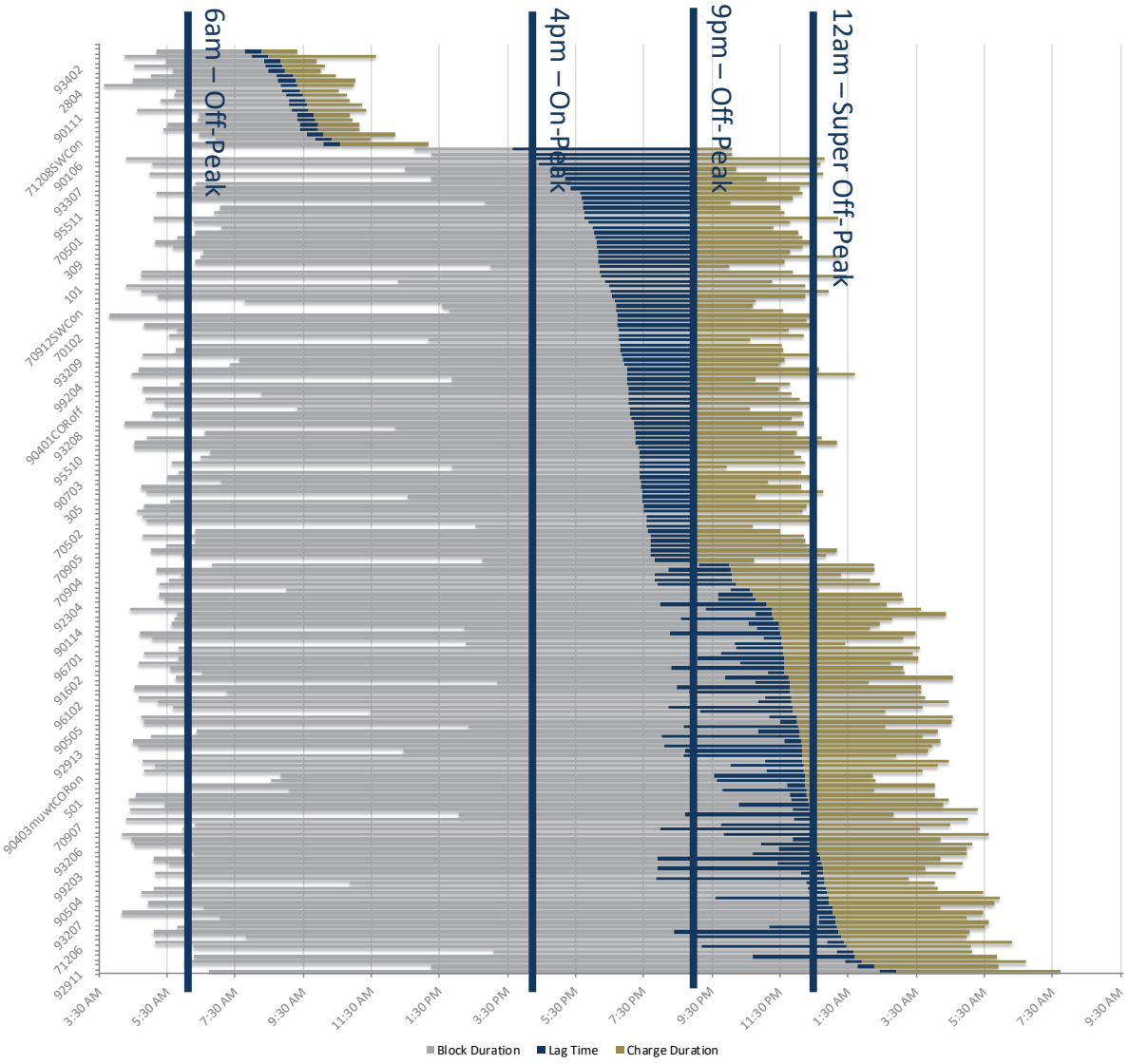


Figure 22 – Managed Charging, South Bay, Weekday, 2040

Minimizing Demand

The other main cost component of the utility bill is the demand charge, billed per kW. For a MTS operating BEBs, the number of chargers operating simultaneously is directly proportional to demand costs. By reducing the number of chargers running at any given time, demand costs are reduced. In this analysis, all chargers are assumed to provide 125 kW to the bus and pull approximately 132 kW from the grid.

In **Figure 23** below, managed charging eliminates the demand during the On-Peak by delaying charging to start only after 9pm. Charges that previously occurred On-Peak were spread to the Off-Peak and Super Off-Peak times. The Managed Off-Peak and Super Off-Peak windows do have a higher average demand than in the Unmanaged case, but demand costs are determined by the maximum, so overall, costs are still reduced, because the Managed peak demand is still lower than the peak in the Unmanaged case.

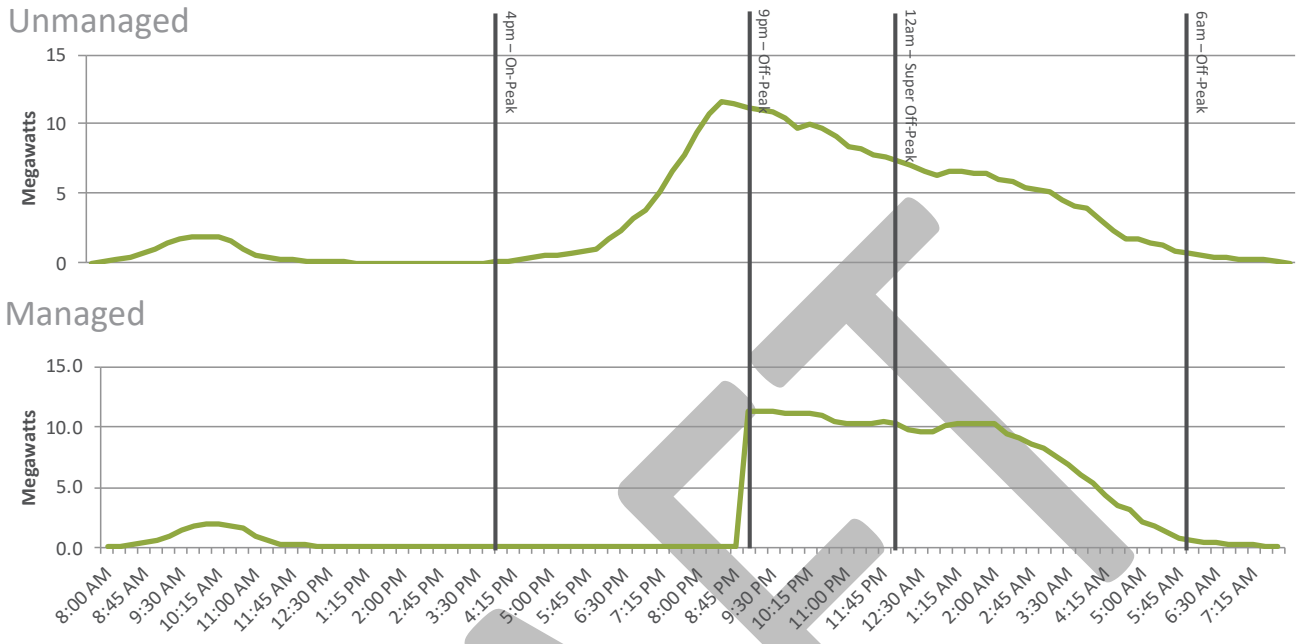


Figure 23 – Weekday Demand, South Bay, 2040

Table 17 provides more detail for the demand analysis. The Unmanaged case experiences a maximum demand of 11,580 kW during On-Peak; however, in the Managed case, all On-Peak demand is eliminated. This change eliminates SDG&E's demand charge, which is only based on On-Peak demand, saving $2.38 million annually (**Table 16**). In the Managed case, the max demand (11,220 kW) occurs during Off-Peak, and is still lower than the Unmanaged peak, therefore SDG&E's Noncoincident demand charge is reduced by approximately $100,000 annually (**Table 16**).

Table 17– Demand by Time of Use, South Bay, 2040

Time of Use	Unmanaged Peak Demand (kW)	Managed Peak Demand (kW)
On-Peak	11,580.8	0.0
Off-Peak	11,167.2	11,220.0
Super Off-Peak	7,312.8	10,331.2

Figure 24 shows the annual BEB depot charging costs based on managed charging as discussed previously in the charging analysis. These costs are inclusive of all divisions. The charging costs are applicable to the BEB Depot Only Charging scenario, the BEB Depot and On-Route Charging, and the Mixed BEB and FCEB scenario costs. Additional cost evaluation is completed for on-route charging to include the estimated fuel costs.

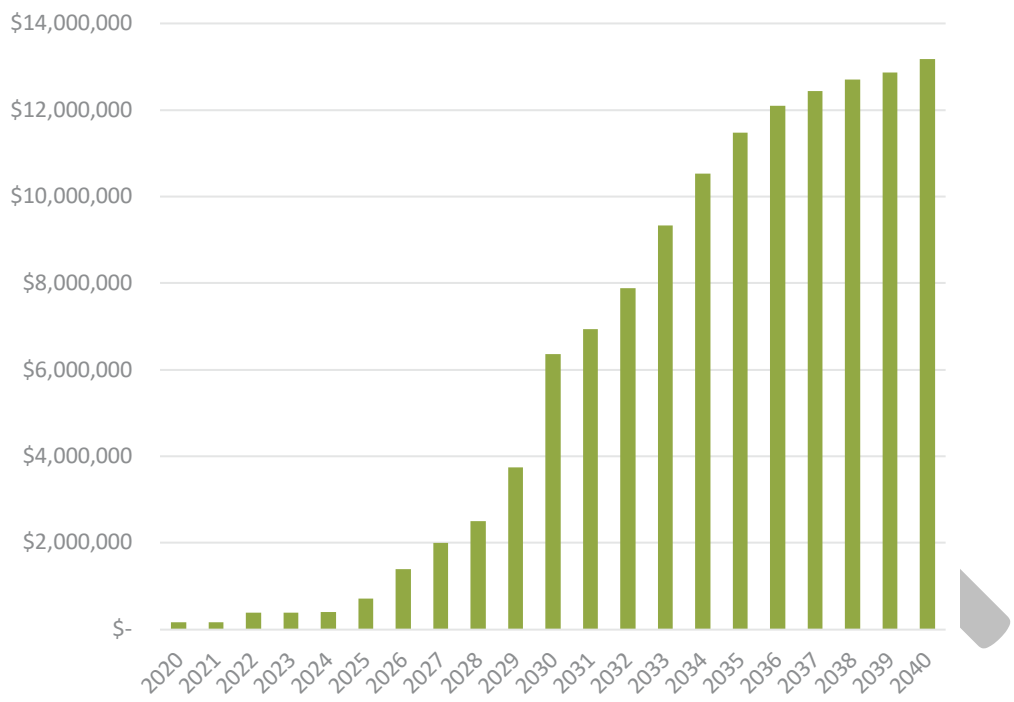


Figure 24 – Annual BEB Depot Charging Costs

The SDG&E Proposed EV Rate was also evaluated for comparison to the existing AL-TOU rates to determine potential costs savings over the life of the transition although the rate has yet to be approved. Results from the analysis indicate an approximate 26% savings in fuel costs over the transition period if the Proposed EV Rate is implemented and remains in effect for the duration of the transition. However, for the purposes of the transition analysis, the current AL-TOU rates were utilized for cost estimating and comparison to Baseline.

Baseline

The Baseline scenario is comparative purposes only and assumes that there is no change in the current MTS fleet configuration throughout the life of the study. The Baseline scenario helps create context for incremental costs incurred or benefits accrued by transitioning the fleet to zero-emission.

Figure 25, below, depicts energy consumption for each fuel type over the transition period for the Baseline scenario. Fuel use is shown in diesel gallon equivalent (DGE) for all fuel types. It is assumed that the fuel economy for MTS' internal combustion engine vehicles remain constant over the study life.

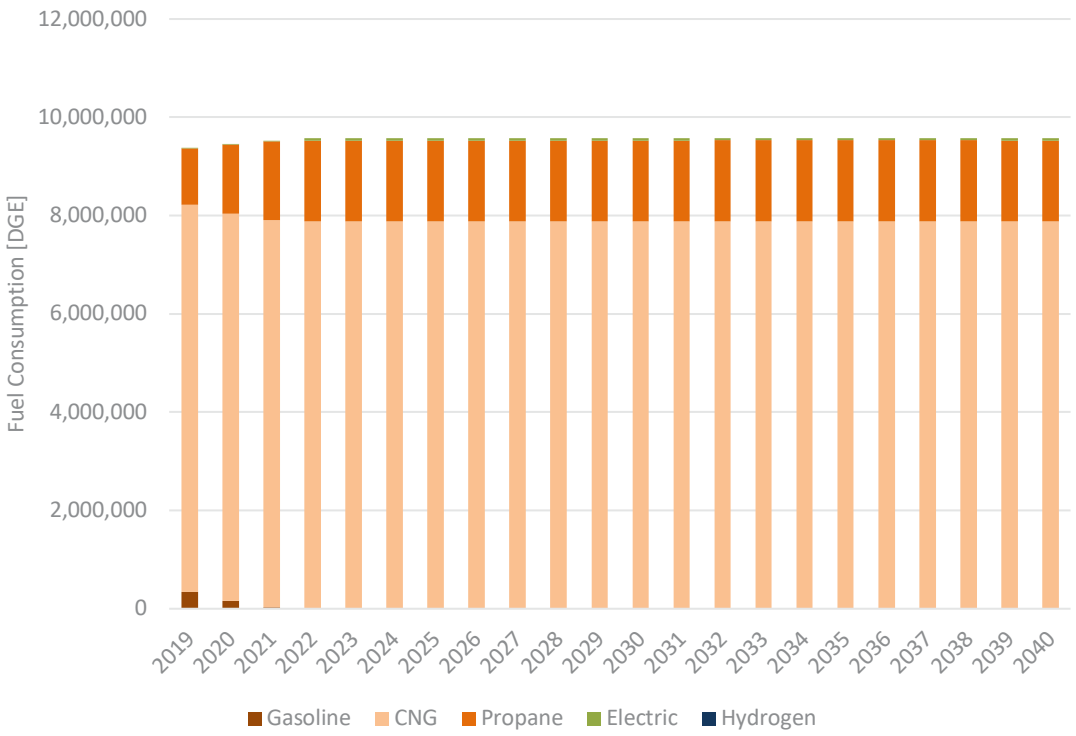


Figure 25 – Annual Fuel Consumption, Baseline

Figure 26 shows the calculated annual costs for each fuel type based on the quantities for the Baseline scenario.

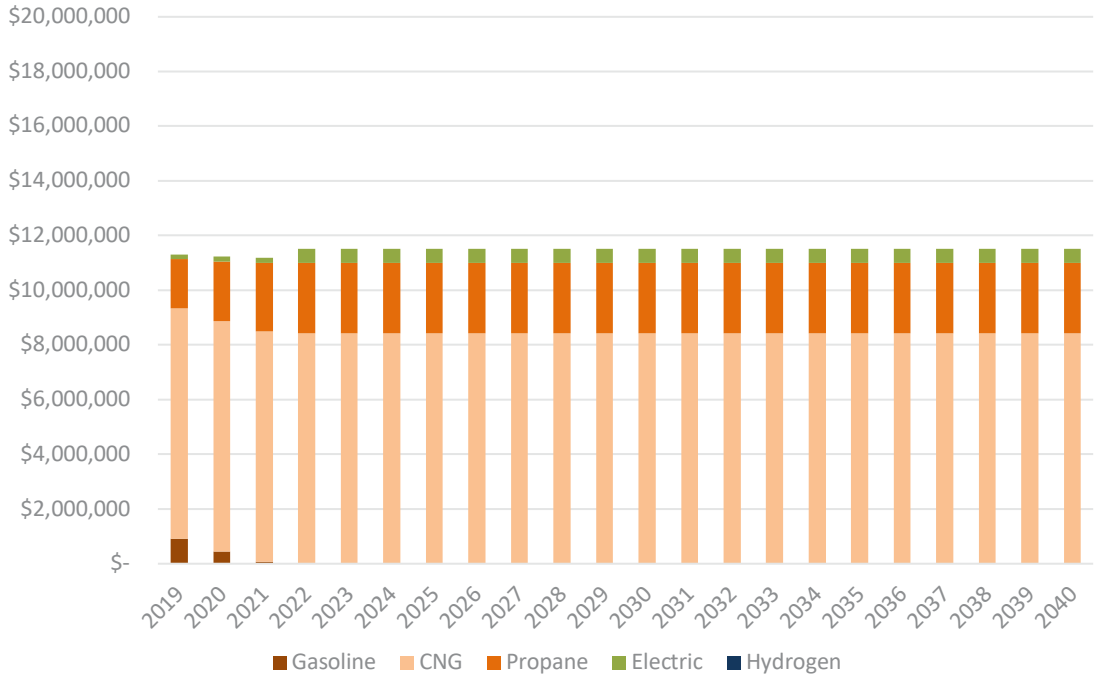


Figure 26 – Annual Fuel Costs, Baseline

BEB Depot-Only Charging

Figure 27 depicts energy consumption by fuel type over the transition period for the BEB Depot-Only Charging scenario. As one would expect, legacy fuels are phased out as electricity consumption increases, reflecting an increasing number of BEBs in the fleet. Electricity use by BEBs, measured in kWh, is converted to DGE for this analysis. Total energy use in 2040 is less than half of that in 2019 due to the improved efficiency of BEBs over fossil-fuel vehicles.

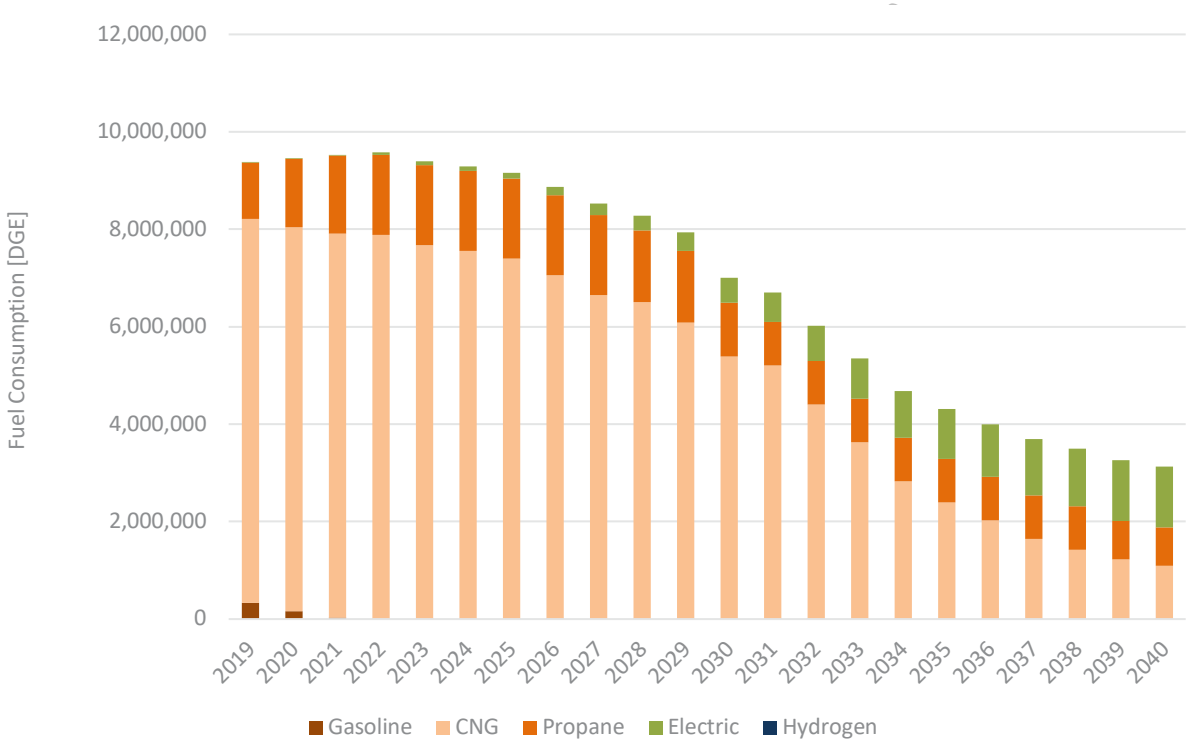


Figure 27 – Annual Fuel Consumption, BEB Depot-Only Scenario

Figure 28 shows the annual costs for each fuel type based on the quantities shown in **Figure 27**. Total estimated fuel costs in 2040 are approximately $16 million.

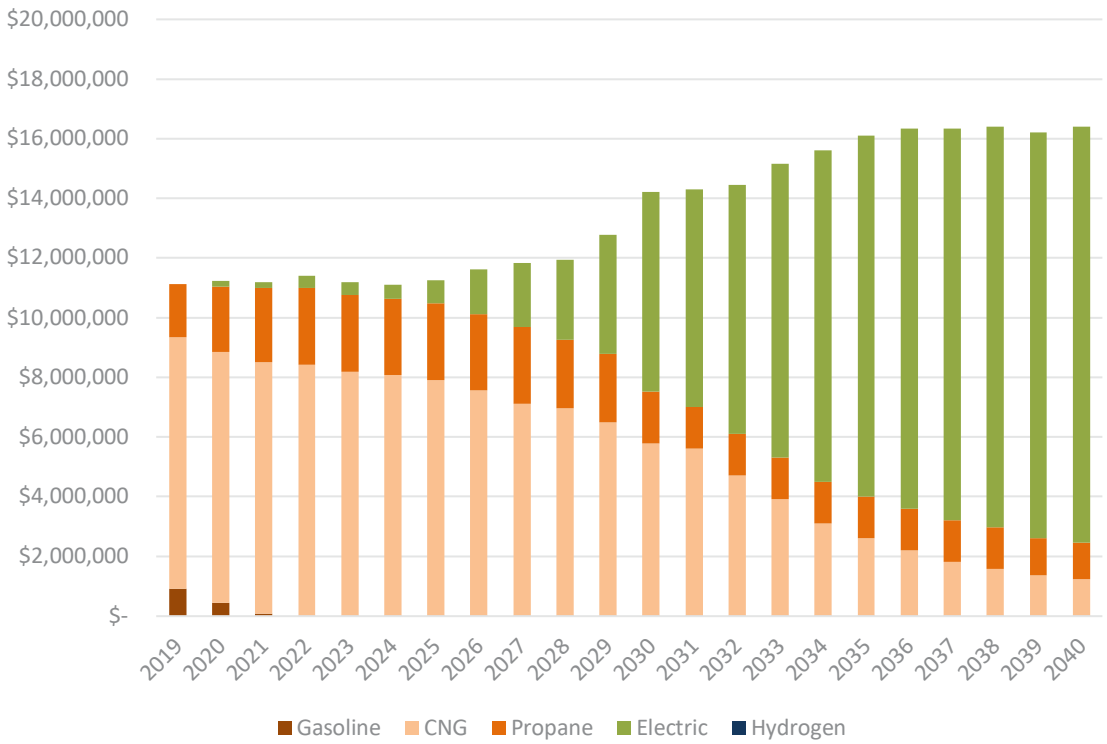


Figure 28 – Annual Fuel Costs, BEB Depot-Only Scenario

BEB Depot and On-Route Charging

Because bus replacements are based on block achievability, there may be instances where block coverage is insufficient and depot-charged BEBs cannot meet service requirements. On-route charged BEBs can be used to supplement depot charging to extend the range of vehicles and increase the feasibility for a 100% ZEB fleet. On-route charging allows an agency to add energy to buses while in service, providing the additional energy necessary to complete a block, without having to travel the extra distance and take the extra time to charge at a depot. Because MTS operates their Paratransit service as on-demand with no set routes or service area, the use of on-route charging is not feasible for these vehicles because they are unable to predict where a vehicle will be at a specific time of day when it needs to charge.

Figure 29, below, depicts energy consumption for each fuel type over the transition period assuming combination of depot and on-route charged BEBs. As expected, legacy fuels are phased out as electricity consumption increases, reflecting an increasing number of BEBs in the fleet. Total energy use in 2040 is approximately 20% of total energy use in 2019; this is representative of the improved efficiency of BEBs over internal combustion engine vehicles.

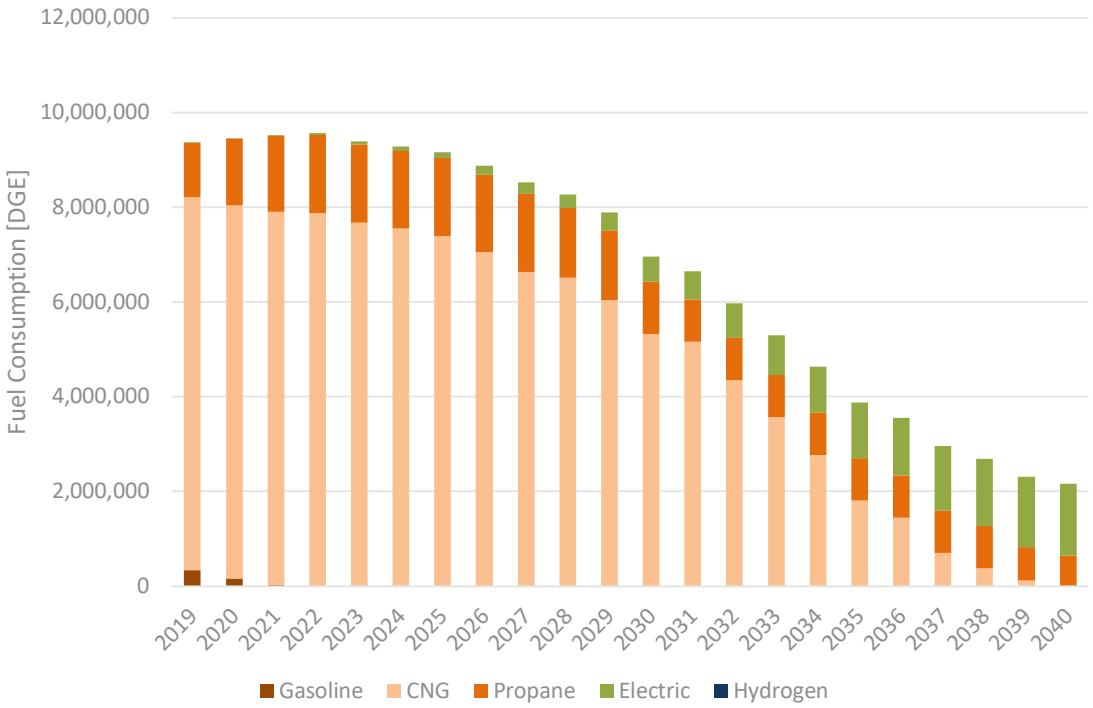


Figure 29 – Annual Fuel Consumption, BEB Depot and On-Route Scenario

Figure 30 shows the annual costs for each fuel type based on the quantities in **Figure 29**. Total estimated fuel costs in 2040 are approximately $20 million.

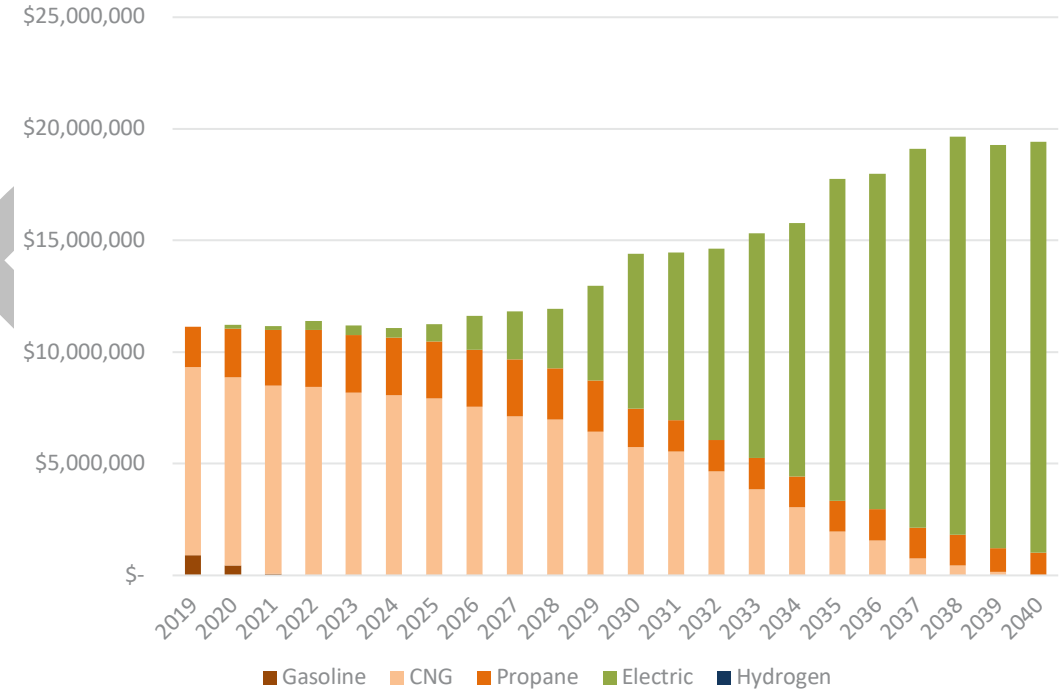


Figure 30 – Annual Fuel Costs, BEB Depot and On-Route Scenario

FCEB Only

Typically, FCEBs have greater range than a BEB, and are able to complete all of MTS's blocks by the end of the transition in 2040. **Figure 31** depicts fuel consumption for each fuel type over the transition period for the FCEB Only scenario. As expected, legacy fuels are phased out as hydrogen consumption increases, reflecting an increasing number of FCEBs in the fleet. Total energy use in 2040 is reduced by half from 2019.

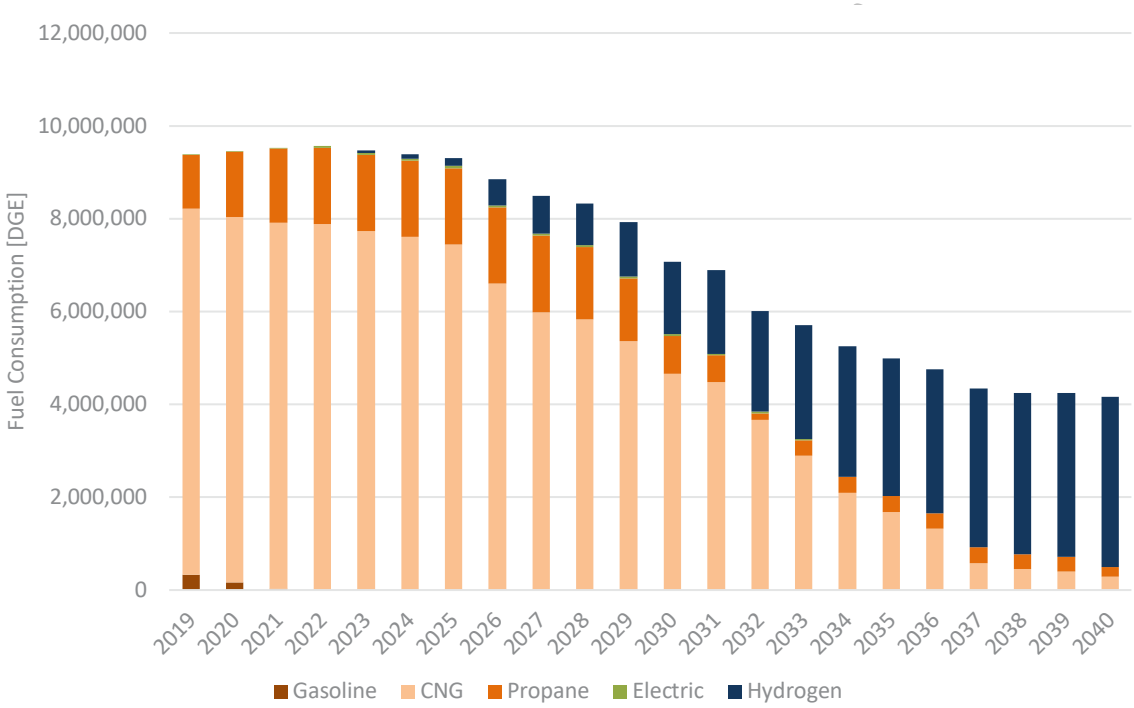


Figure 31 – Annual Fuel Consumption, FCEB Only Scenario

Figure 32 shows estimated annual costs for each fuel type based on the quantities shown in **Figure 31**. Total estimated fuel costs in 2040 are approximately $33 million, the bulk of which is from hydrogen.

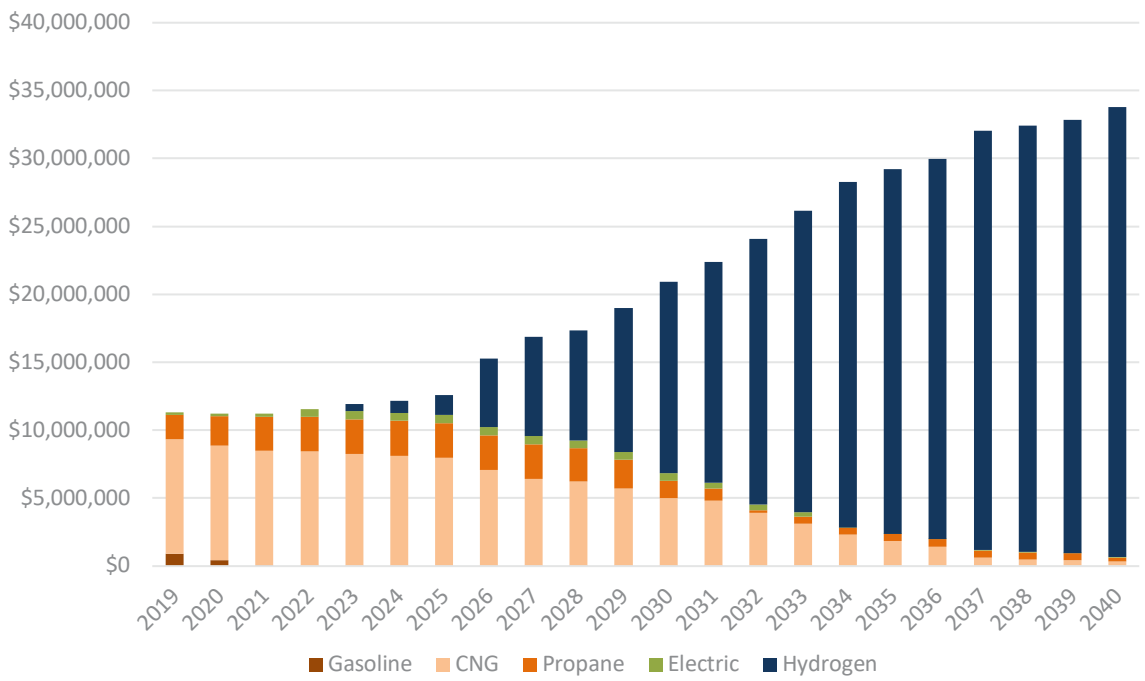


Figure 32 – Annual Fuel Costs, FCEB Only Scenario

Mixed BEB and FCEB

In the Mixed BEB and FCEB scenario, BEBs are utilized where they can replace fossil-fuel vehicles on a one-for-one basis. Since FCEBs have a greater range, they are used on the longer blocks and in Paratransit service where BEBs are not feasible. By the end of the transition period, any instance where block coverage was insufficient, a FCEB is used to replace the MTS' original vehicle type

Figure 33 depicts energy consumption for each fuel type over the transition period for the Mixed BEB and FCEB scenario. Legacy fuels are phased out as electricity and hydrogen consumption increases, reflecting an increasing number of BEBs and FCEBs in the fleet. Equivalent fleet energy use is reduced from nearly 10 million DGE in 2019 to just over 2 million DGE in 2040, an approximate 80% decrease.

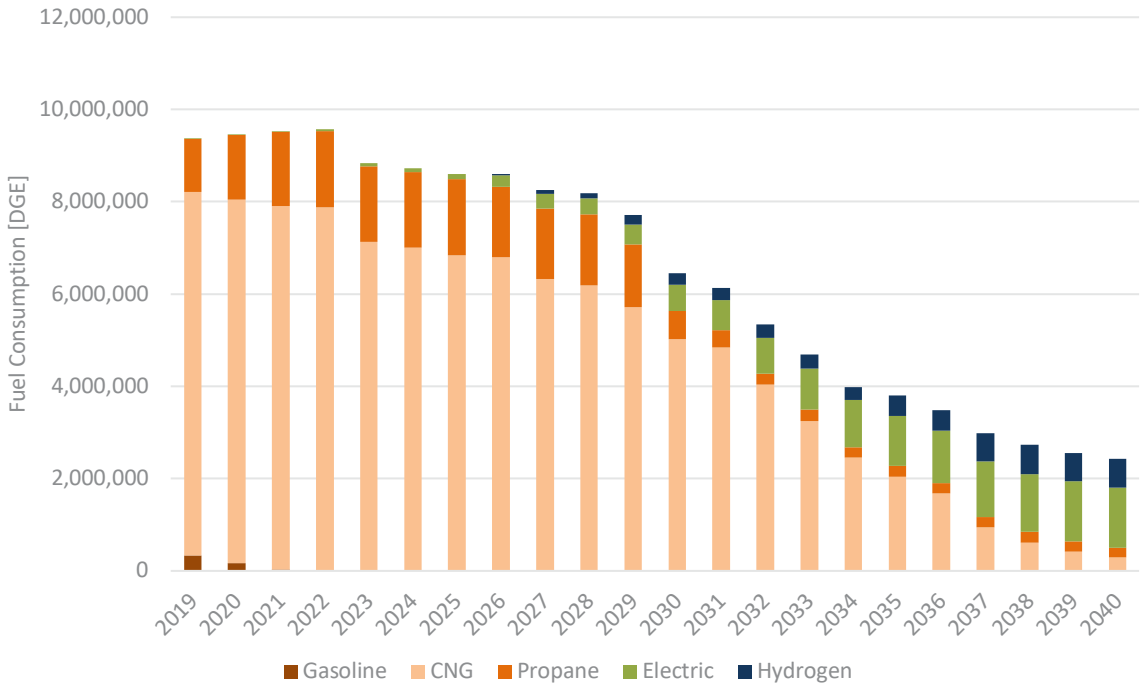


Figure 33 – Annual Fuel Consumption, Mixed Scenario

Figure 34 shows the estimated annual costs for each fuel type based on the quantities found in **Figure 33.** Total estimated fuel costs in 2040 are approximately $20 million, a majority of which are from electricity use for BEBs and to a lesser extent hydrogen fuel.

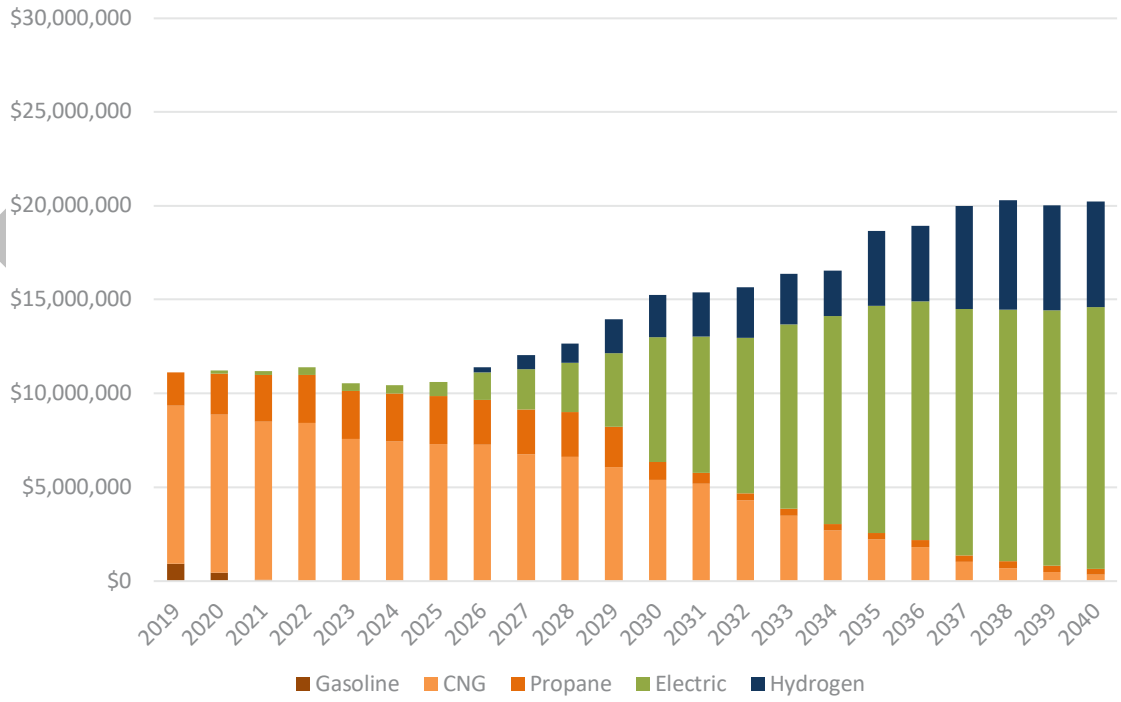


Figure 34 – Annual Fuel Costs, Mixed Scenario

Fuel Assessment Cost Comparison

The Fuel Assessment includes all electrical and fuel costs over the transition for each scenario. **Figure 35** shows the cumulative fuel costs for each scenario. **Table 18** shows the combined total costs, the incremental cost over the Baseline and the percentage of the fleet that is zero-emission in 2040.

Figure 35 - Total Costs, Fuel Assessment

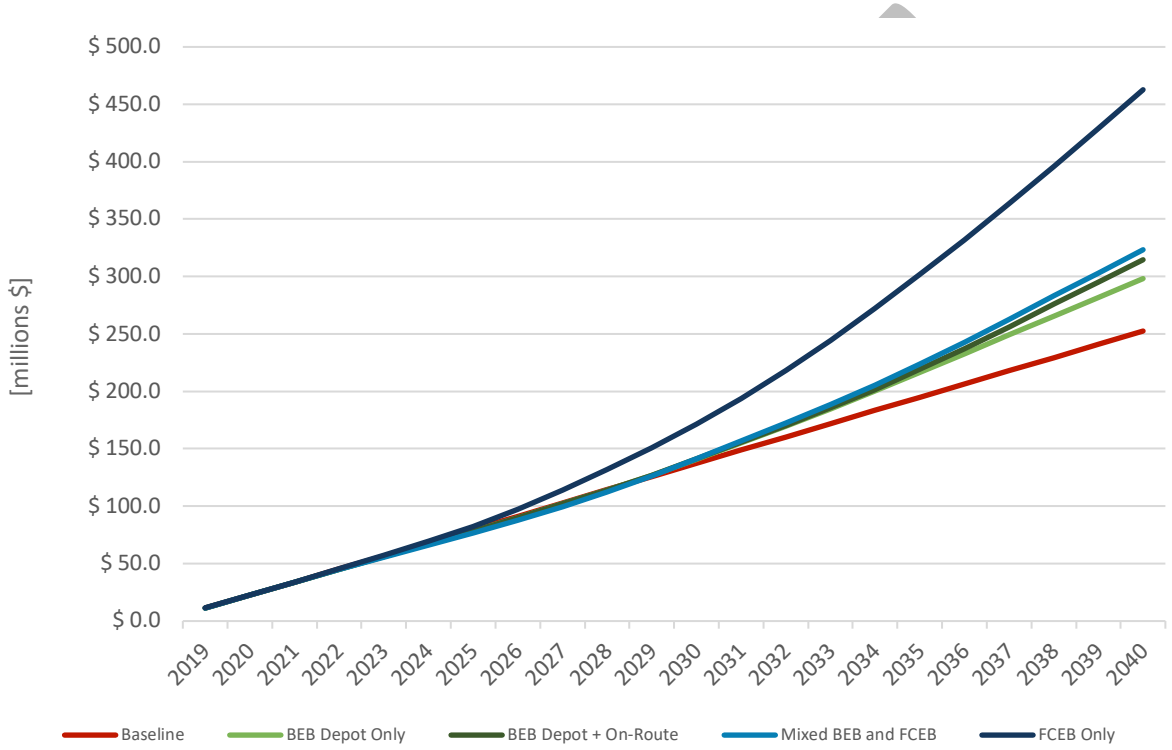


Table 18 - Total Costs, Fuel Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ 252,569,000	----	2%
BEB Depot Only	$ 298,234,000	18%	77%
BEB Depot + On-Route	$ 314,657,000	25%	84%
FCEB Only	$ 462,731,000	83%	95%
Mixed BEB and FCEB	$ 323,380,000	28%	95%

Facilities Assessment

Once bus and fueling requirements are understood for the ZEB transition, the requirements for supporting infrastructure can be determined including charging equipment for BEBs and hydrogen fueling equipment for FCEBs. The Facilities Assessment determines the scale of charging and/or hydrogen infrastructure necessary to meet the demands of the projected fleets' energy use estimated in the Fleet and Fuel Assessments, as well as all associated costs with installation of this infrastructure.

This section is divided between battery electric infrastructure and hydrogen fueling infrastructure. The scenarios shown below correspond with scenarios in the Fleet and Fuel Assessments.

Baseline

For the Baseline scenario, there are no additional costs associated with ZEB infrastructure because no ZEBs are added to the fleet. Although a total of two (2) BEBs and twelve (12) BEBs are scheduled to be added to the fleet in 2020 and 2022, respectively, these buses were already considered part of the baseline analysis as the infrastructure costs have already been programmed. No additional fueling infrastructure upgrades are required to support the Baseline scenario. Since the current fossil-fuel fueling infrastructure (CNG, gasoline, propane) must remain in place throughout the transition period, any upgrades or maintenance shall be required for each scenario. Related costs will be the same for each scenario and thus excluded from the analysis.

Battery-Electric Charging Infrastructure Scenarios

With pilot BEB deployments, charging requirements are met relatively easily with a handful of plug-in pedestal chargers and minimal infrastructure investment. Scaling to a fleetwide BEB deployment requires a significantly different approach to charging and substantial infrastructure upgrades. Plug-in charging is no longer practical as charger dispenser cables can create hazards in the bus yard. Instead, the preferred approach is to use overhead pantograph or reel dispensers attached to gantries installed above bus parking lanes.

In addition to the installation of the charging stations, improvements to existing electrical infrastructure including switchgear, service connections, etc. are required to support deployment of BEBs. Design work will be required to support BEB deployment including development of detailed electrical and construction drawings required for permitting once specific charging equipment has been selected. To define the timeline and costs to install the necessary charging equipment, the scope of work is broken into four key project types: planning, structural, power upgrades, and charger installation. Rather than building out the infrastructure all at once, projects are sized and scheduled to meet the near-term charging requirements.

CTE and AECOM developed estimates for components of each projects to build up a total cost estimate for each project. Assumptions used for BEB infrastructure are shown in **Table 19**. Conceptual BEB depot layouts, prepared by AECOM, are provided in **Appendix A – Depot Site Plans, BEB Infrastructure.**

Table 19 – BEB Infrastructure Planning Assumptions

Project	Cost Estimate Metrics	Source
Infrastructure Planning	$150k per division	Engineer's estimate
Structural Projects (Gantries, Conduit, duct banks, etc.)	Design/Construction: avg. $99k per bus	Engineer's estimate, includes 20% contingency
Power Upgrade Projects	Design, Construction, & Equip: $218k per MW	Engineer's estimate, includes 20% contingency
Charging Projects	Charging Equipment & Installation: $72k per bus	Quotes and estimates, includes 20% contingency

Key assumptions:

- Gantry structures used at each division except for Copley as depot plug-in charging will be utilized with cutaway vehicles
- One (1) plug-in reel or overhead pantograph per bus
- Two (2) buses per 125 kW charger except at Copley where four (4) per charger
- Two (2) charge windows, i.e., no more than half the buses charge at any given moment expect at Copley where four (4) charge windows
- Off-peak, overnight charging
- Charge management software to manage charging
- Dispenser capacity to serve up to 80% of the fleet at a time; No movement of buses overnight

Source: CTE

BEB Depot-Only Charging

Charging infrastructure to support 648 depot-charged BEBs in 2040 is required, as calculated in the Fleet Assessment.

Depot Planning Projects

The build-out of charging infrastructure will require planning at each division. Planning is assumed to cost approximately $150,000 at each division and will occur as shown in the table below. One planning project is expected at each of the five depots, which totals approximately $750,000 over the life of the transition.

Table 20 – Planning Projects, BEB Depot-Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										1													1
East County								1															1
Kearny Mesa				1																			1
Imperial Ave										1													1
South Bay			1																				1
Total			**1**	**1**				**1**		**2**													**5**

Depot Structural Projects

Structural projects include (1) trenching and build out duct banks from the switchgear to the charger pads, (2) construction of charger pads (i.e., foundation for charging equipment), (3) construction of gantry foundations and overhead gantry structures that hold the dispensers, and (4) installation of conduit from switchgear to charger pads and gantries. **Table 21** shows the detailed cost assumptions for structural projects. These cost assumptions also apply to other projection scenarios. Duct bank cost is incurred only once per division, other costs are on a per gantry basis.

Table 21 – Structural Project Cost Assumptions

Item	Cost	Unit
Initial Duct/Bank	$ 300,000	per division
Gantry & Foundation	$ 500,000	per gantry
Incremental Duct Bank/Conduit	$ 15,000	per gantry
Charger Pad (3 chargers per gantry)	$ 25,000	per gantry
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

Each entry in the table below indicate a structural project to add overhead gantry capacity to each depot. **Table 22** shows the number of gantries added in a given year at each depot. Each gantry can serve between five and eight buses, depending on the location and space constraints at the depots. Note, that gantries are not employed at Copley as the depot only services cutaway vehicles and it is expected that these vehicles will charge using plug-in charging.

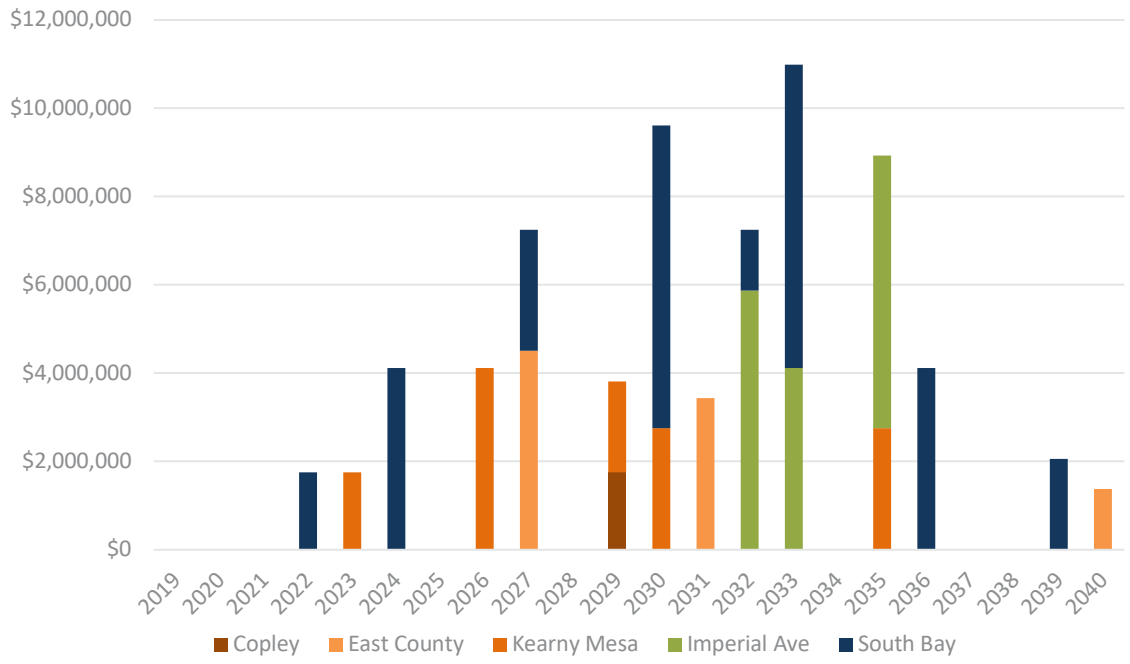
Table 22 – Incremental Gantries, BEB Depot-Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley											2												2
East County									6				5									2	13
Kearny Mesa					2			6			3	4					4						17
Imperial Ave														8	6		9						23
South Bay				2		6			4			10		2	10			6			3		43
Total				**2**	**2**	**6**		**6**	**10**		**5**	**14**	**5**	**10**	**16**		**13**	**6**			**3**	**2**	**98**

Figure 36 shows the total annual costs of structural projects by division for the BEB Depot-Only Charging scenario. These costs include the initial duct bank costs at each division, plus gantry and foundation costs, incremental duct bank/conduit costs and charger pad costs per gantry, sequenced in accordance with the above tables. On top of these costs, 20% contingency and 6% engineering cost is added. Although no gantries are proposed at Copley, there are still

structural projects that are required to support plug-in charger installation including duct bank installation, charger pad installation, and design services.

Figure 36 – Annual Structural Projects Cost, BEB Depot-Only Scenario



Depot Power Upgrade Projects

Power upgrade projects include construction of transformer foundations and installation of transformers. It is assumed that transformers will be modular and incremental power requirements are met over time. The table below shows the assumed costs for depot power upgrade projects.

Table 23 – Power Upgrade Cost Assumptions, BEB Depot-Only Scenario

Transformer/Switchback Pad	Cost	Unit
Transformer/Switchback Pad	$ 350,000	per division, up to 10 MW
Construction, Equipment (1 MW)	$ 200,000	per project
Construction, Equipment (2 MW)	$ 300,000	per project
Construction, Equipment (3 MW)	$ 350,000	per project
Construction, Equipment (4 MW)	$ 375,000	per project
Construction, Equipment (5 MW)	$ 400,000	per project
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

Table 24 shows incremental required electrical demand, in megawatts, for each division. Each entry indicates the minimum amount of power that must be added in a given year to meet the growing demand at a given facility as more BEBs are purchased. Please note that the incremental demand at Imperial Avenue noted in 2019. The additional demand associated with two 62.5 kW chargers at East County, Kearney Mesa, and South Bay is not included in this forecast to support the two year pilot program as these buses are associated with Imperial Ave and no additional power upgrades were required to complete the installations.

Table 24 – Incremental Electrical Demand, BEB Depot-Only Scenario [MW]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										0.7		0.8	0.8								0.4		2.8
East County									0.4	0.7	0.8		1.4									0.7	4.0
Kearny Mesa			0.1		0.8			0.7	0.6		1.3	0.7		0.7			0.3				0.4		5.6
Imperial Ave	0.4													2.1	0.7	0.7	1.4	1.0	1.0				7.2
South Bay				0.7		0.6	0.7	0.8	0.7			2.4		0.8	2.1	2.1		0.7	0.7	1.0	1.0		14.2
Total	**0.4**		**0.1**	**0.7**	**0.8**	**0.6**	**0.7**	**1.5**	**1.7**	**1.4**	**2.1**	**3.9**	**2.2**	**3.6**	**2.8**	**2.8**	**1.7**	**1.7**	**1.7**	**1.0**	**1.8**	**0.7**	**33.8**

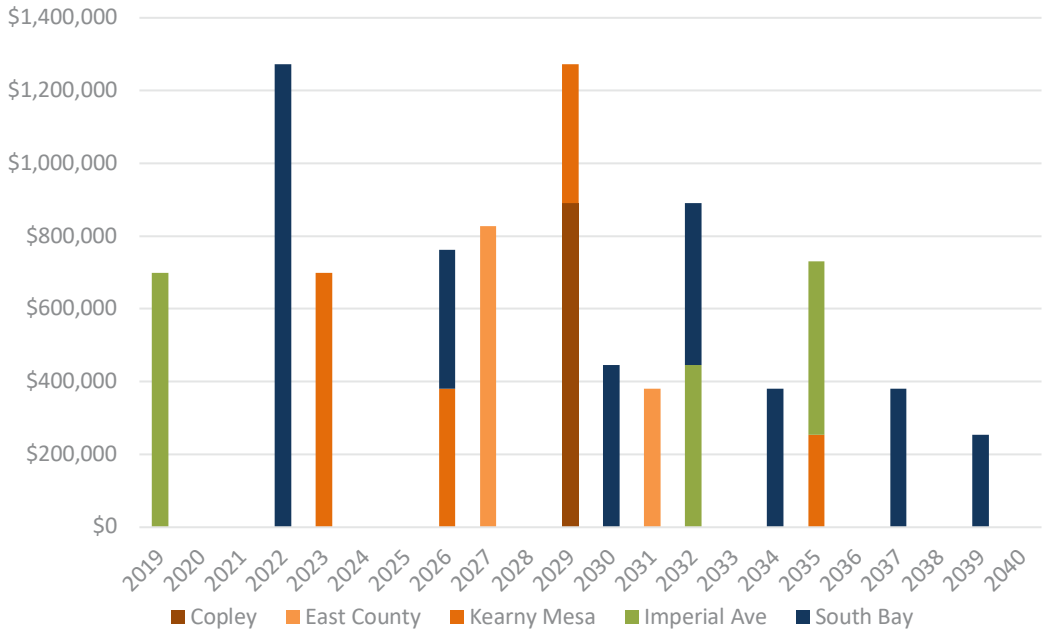
It is more economical, however, to increase power capacity in fewer projects that can meet power requirements for a longer period of time. Therefore, power upgrades are consolidated to occur in selected years, in accordance with the required demand in **Table 24**. These recommended upgrades are shown in **Table 25**. MTS will need to add an additional estimated 36 MW of capacity to its system by 2040 to accommodate charging for 640 BEBs.

Table 25 – Recommended Power Upgrade Projects, BEB Depot-Only Scenario [MW]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley											3.0												**3.0**
East County									2.0				2.0										**4.0**
Kearny Mesa					1.0			2.0			2.0						1.0						6.0
Imperial Ave	1.0													3.0			4.0						8.0
South Bay				2.0				2.0				3.0		3.0		2.0			2.0		1.0		**15.0**
Total	**1.0**			**2.0**	**1.0**			**4.0**	**2.0**		**5.0**	**3.0**	**2.0**	**6.0**		**2.0**	**5.0**		**2.0**		**1.0**		**36.0**

The total cumulative cost of Power Upgrade projects, in 2019 dollars, is provided in **Figure 37.** Total estimated power upgrade costs over the project life are approximately $10 million.

Figure 37 – Annual Power Upgrade Project Costs, BEB Depot-Only Scenario



Depot Charger Installation Projects

Charging projects include purchase and installation of 125 kW chargers and dispensers. Each bus will require one dispenser. Every two (2) buses (40' and larger) will require one (1) charger, with the exception of buses at Copley (all smaller, cutaway-style buses) which are assigned four (4) buses to one charger. Please note that six (6) 62.5 kW plug-in chargers with one dispenser each at Imperial Avenue and two (2) 62.5 kW plug-in chargers with one dispenser each at East County, Kearney Mesa, and South Bay have already been installed to support the pilot program. Dispensers for future installation are expected to be either overhead reel or pantograph style except for Copley where plug-in chargers are assumed. **Table 26** provides the costs assumed for charger and dispenser installs.

Table 26 – Dispenser and Charger Project Cost Assumptions

Item	Cost	Unit
Charger	$ 80,000	per 125 kW charger
Charger Installation	$ 10,000	per 125 kW charger
Dispenser/Pantograph	$ 10,000	per dispenser
Dispenser Installation	$ 5,000	per dispenser
Contingency	20%	on project costs

Table 27 and **Table 28** show the annual dispensers and charger installations by division for each year of the project.

Table 27 – Annual Dispenser Installations, BEB Depot-Only Scenario

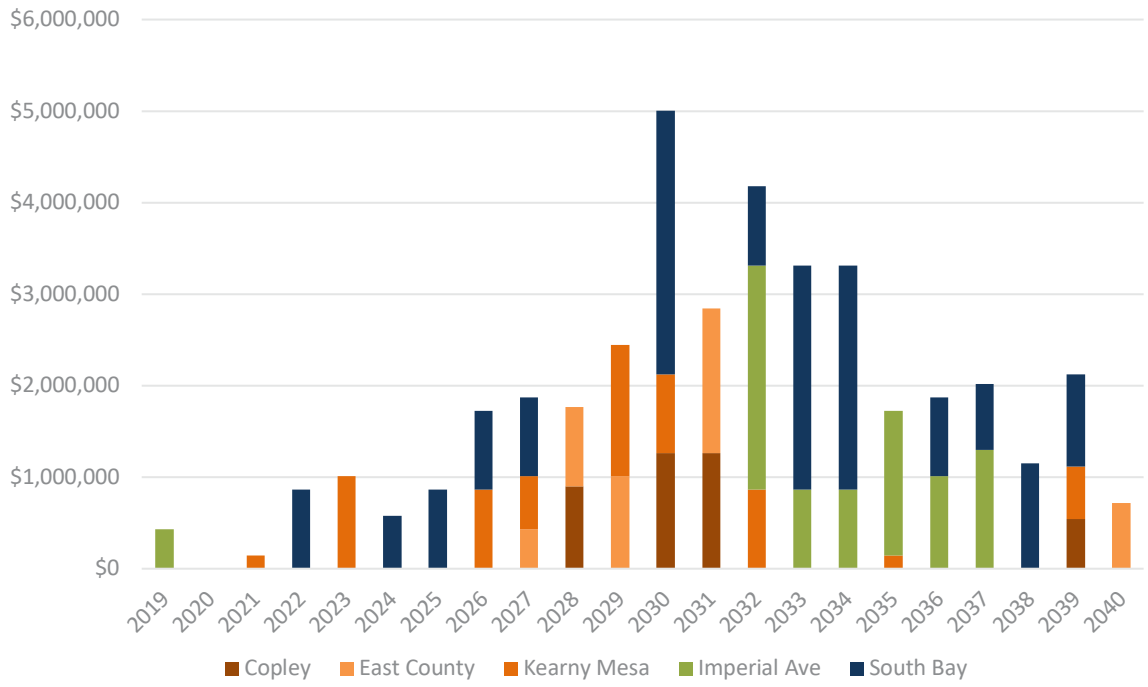
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										20		28	28								12		88
East County									6	12	14		22									10	64
Kearny Mesa			2		14			12	8		20	12		12			2				8		90
Imperial Ave	6													34	12	12	22	14	18				118
South Bay				12		8	12	12	12			40		12	34	34		12	10	16	14		228
Total	**6**		**2**	**12**	**14**	**8**	**12**	**24**	**26**	**32**	**34**	**80**	**50**	**58**	**46**	**46**	**24**	**26**	**28**	**16**	**34**	**10**	**588**

Table 28 – Annual Charger Installations, BEB Depot-Only Scenario

Division	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										5		7	7								3		22
East County									3	6	7		11									5	32
Kearny Mesa			1		7			6	4		10	6		6			1				4		45
Imperial Ave	3													17	6	6	11	7	9				59
South Bay				6		4	6	6	6			20		6	17	17		6	5	8	7		114
Total	**3**		**1**	**6**	**7**	**4**	**6**	**12**	**13**	**11**	**17**	**33**	**18**	**29**	**23**	**23**	**12**	**13**	**14**	**8**	**14**	**5**	**272**

Figure 38 shows the annual cost of charger and dispenser installations based on these cost assumptions and the above estimated charger and dispenser quantities.

Figure 38 – Annual Cost of Charger and Dispenser Installations, BEB Depot-Only Scenario



BEB Depot-Only Charging Infrastructure Cost Summary

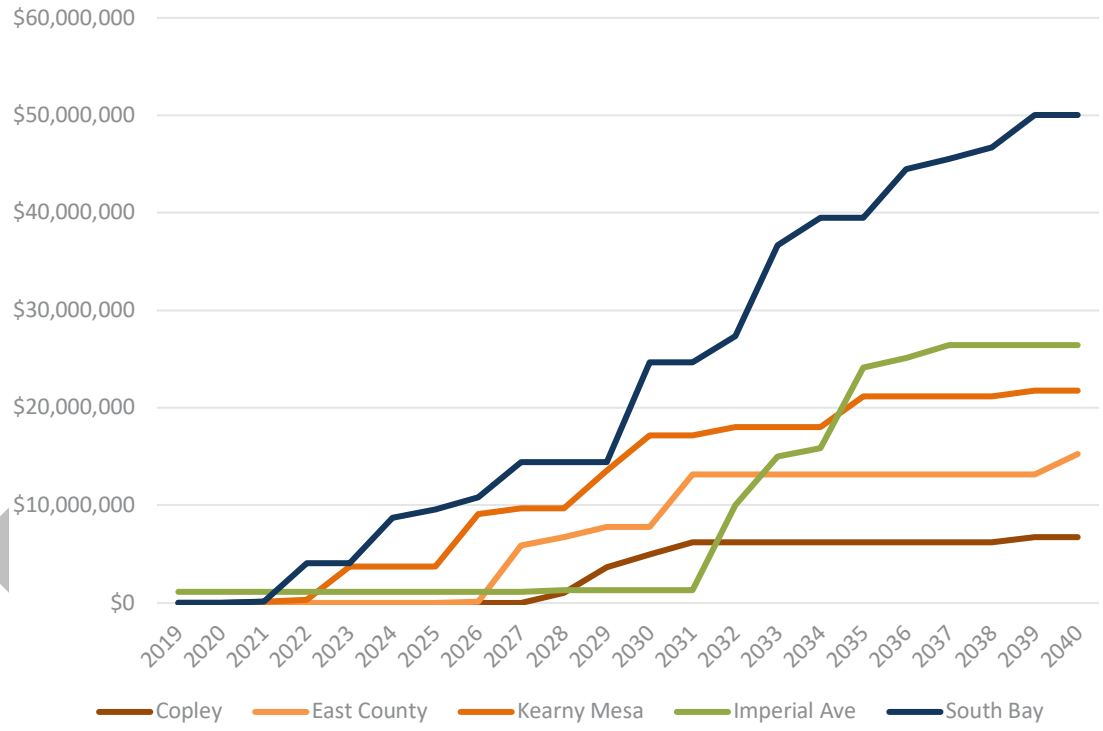
Table 29 summarizes all costs for charging infrastructure by division for the BEB Depot-Only Charging scenario. **Figure 39** shows the cumulative total cost breakdown by division. The estimated total infrastructure costs for the BEB Depot-Only Charging scenario are approximately $120 million; this includes, at all divisions: all gantry structural projects, all power upgrade projects, all charger and dispenser installations, all planning projects, design engineering costs and added 20% contingency on all costs. Costs for a new facility to accommodate overflow due to reduced bus capacity at existing facilities due to infrastructure

space requirements has not been incorporated in this analysis; however, there may be a need to construct a new facility as the build-out progresses.

Table 29 – Total Infrastructure Costs, BEB Depot-Only Scenario

Division	Cost
Copley	$ 6,756,000
East County	$ 15,277,000
Kearny Mesa	$ 21,780,000
Imperial Ave	$ 26,448,000
South Bay	$ 50,045,000
Total	**$ 120,305,000**

Figure 39 – Cumulative Total Infrastructure Costs, BEB Depot-Only Scenario



BEB Depot and On-Route Charging

The BEB Depot and On-Route Charging scenario adds on-route charging infrastructure to the depot charging infrastructure already developed and presented in the previous section. The addition of on-route charging supports deployment of an additional 60 on-route-charged electric buses in addition to 640 depot-charged buses in 2040. All depot charging-related quantities, locations and costs are identical to BEB Depot-Only Charging scenario. The physical locations of the on-route chargers are not at the depot, but are referenced by depot to serve buses that operate out of the referenced depot. In this section, only costs related to the

additional on-route infrastructure are shown; summarized at the end are the combined on-route and depot charging costs.

On-route chargers do not require any additional support structure to be built, such as gantries, and do not require any structural project planning as with depot chargers. Required infrastructure projects for on-route chargers include planning, power upgrade, and charger purchase and installation. **Table 30** shows the cost assumptions used in the following sections to estimate costs for on-route charging infrastructure.

Table 30 – On-Route Infrastructure Project Cost Assumptions

Item	Cost	Unit
Planning	$ 100,000	per site
Chargers	$ 350,000	per 450 kW charger
Charger Installation	$ 50,000	per 450 kW charger
Transformer/Switchback Pad	$ 50,000	per site
Construction, Equipment (1 MW)	$ 200,000	per MW
Contingency	20%	on project costs
Design Engineering	6%	on project costs and contingency

On-Route Planning Projects

The build-out of on-route charging infrastructure will require planning for each site. It is assumed that each on-route charging planning project will cost $100,000 per site with additional 20% contingency costs applied. The planning projects will occur at each location as shown in **Table 31**, below. A total of 8 on-route charging sites will be required to serve the additional 60 on-route-charged buses. Note, because Copley exclusively houses on-demand paratransit buses, on-route charging is not feasible for these buses because they do not run fixed routes.

Table 31 – Planning Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											1												1
Kearny Mesa																	3						3
Imperial Ave																			3				3
South Bay																				1			1
Total											1						3		3	1			8

Total planning costs are approximately $1 million over the life of the transition.

On-Route Power Upgrade Projects

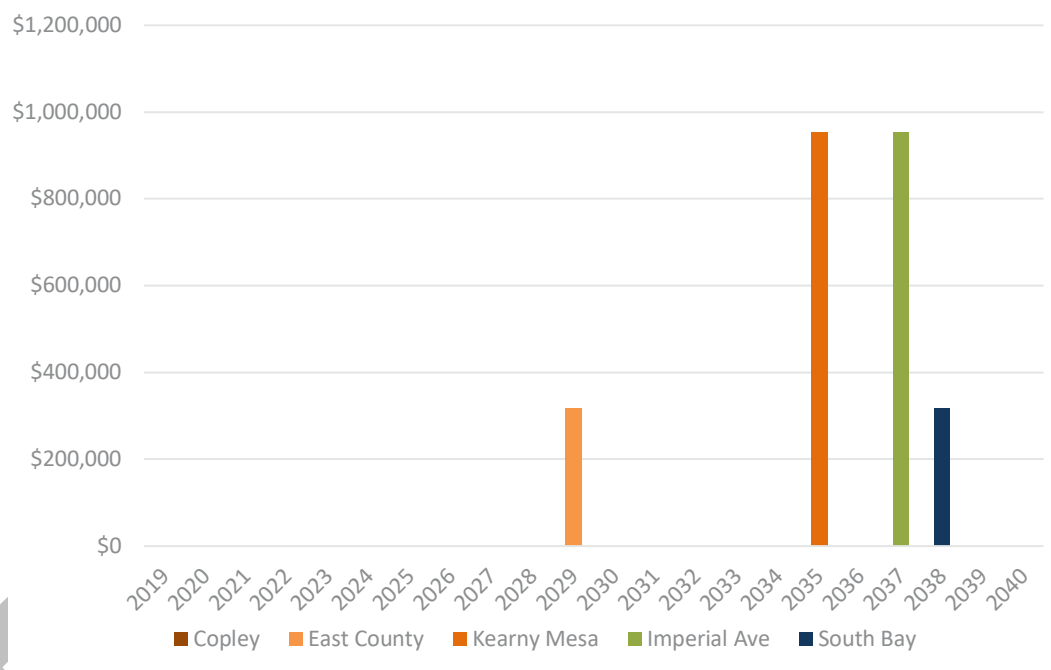
Power upgrade projects include construction of transformer foundations and installation of transformers. Each on-route charging site requires approximately 1 MW of power for two 450 kW chargers. **Table 32** shows a total of 8 MW of additional power required to serve the 67 on-route charged buses, 1 MW each for the 8 required site locations. Power upgrades are in addition to depot power upgrade projects from the BEB Depot-Only Charging scenario.

Table 32 – On-Route Power Upgrade Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											1.0												1.0
Kearny Mesa																	3.0						3.0
Imperial Ave																			3.0				3.0
South Bay																				1.0			1.0
Total											**1.0**						**3.0**		**3.0**	**1.0**			**8.0**

The total annual cost of on-route power upgrade projects, in 2019 dollars, is provided in **Figure 40**. From **Table 30**, each power upgrade project is assumed to cost $250k per site (at 1 MW each), plus 20% contingency costs. In 2040, total power upgrade costs are approximately $2.5 million over the life of the transition.

Figure 40 – Annual Power Upgrade Project Cost for On-Route Charging, BEB Depot and On-Route Scenario



On-Route Charger Installation Projects

Table 33 shows assumed costs for on-route charger procurement and installation projects.

Table 33 – On-Route Charger Project Cost Assumptions

Item	Cost	Unit
Chargers	$ 350,000	per 450 kW charger
Charger Installation	$ 50,000	per 450 kW charger
Contingency	20%	of project costs

On-route chargers require purchase and installation of 450 kW chargers and pantograph dispensers. For on-route charging, one dispenser per charger is assumed, and is included in the charger cost.

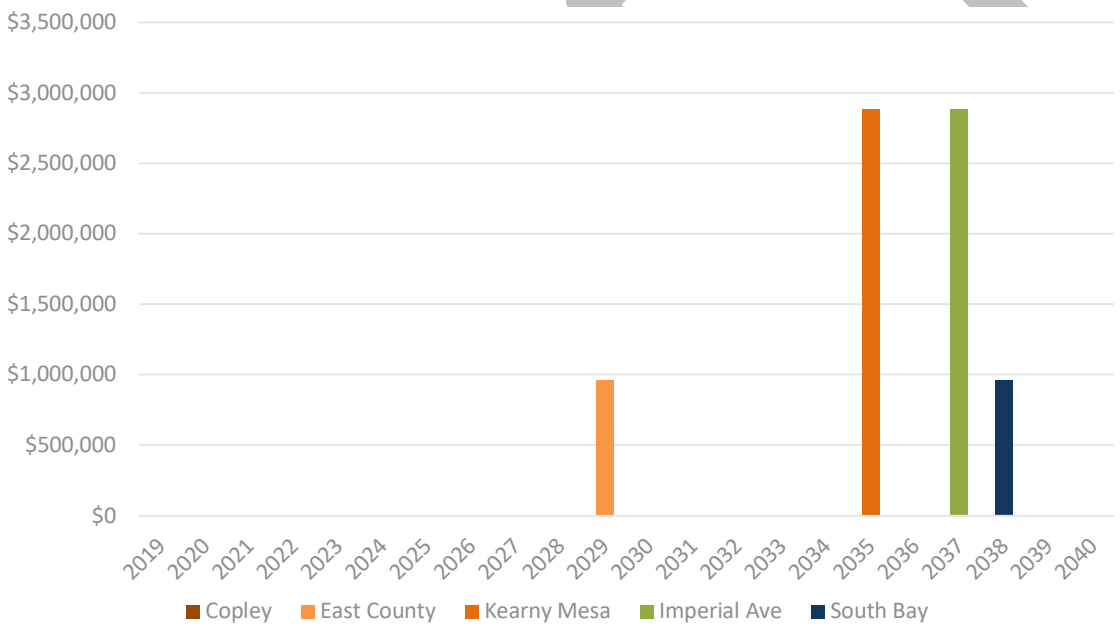
Table 34 shows on-route charger installations. Like planning and power upgrade projects, all site charger installations for each depot occur in a single year. Each charging site requires two chargers. For 8 sites, a total of 16 chargers are required.

Table 34 – Charger Installation Projects, BEB Depot and On-Route Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley																							
East County											2												**2**
Kearny Mesa																	6						**6**
Imperial Ave																			6				**6**
South Bay																				2			**2**
Total											**2**						**6**		**6**	**2**			**16**

Figure 41 shows the total annual costs of on-route charger installations for the BEB Depot and On-Route Charging scenario. Total charger procurement and installation costs are approximately $8 million over the life of the project.

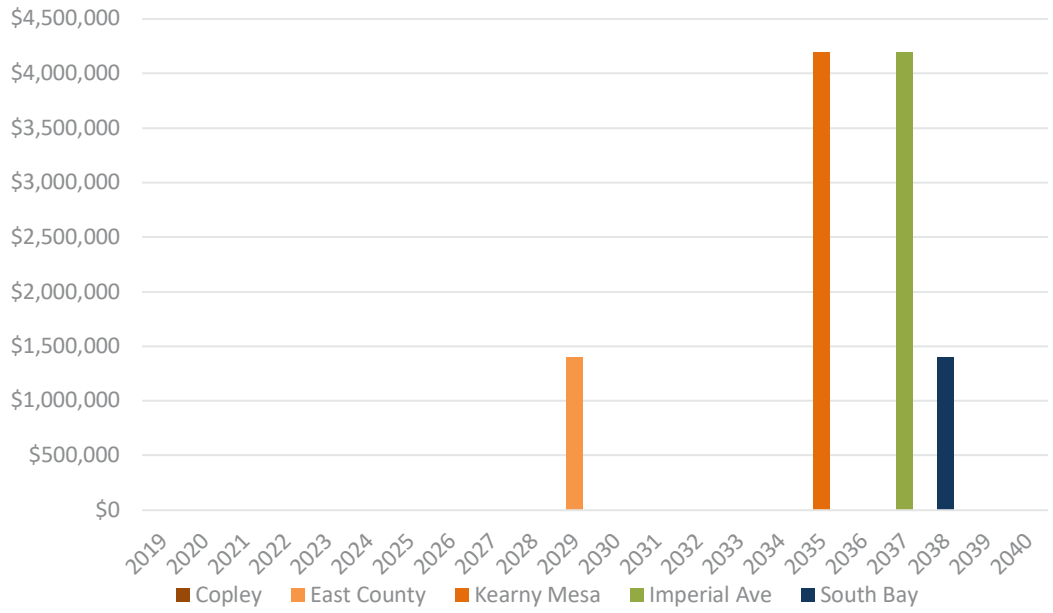
Figure 41 – Annual Charger Install Costs for On-Route Chargers, BEB Depot and On-Route Scenario



BEB Depot and On-Route Charging Infrastructure Summary

Estimated total annual costs for on-route charging infrastructure are shown in **Figure 42.** Total cumulative on-route charger infrastructure costs are approximately $11 million over the transition period.

Figure 42 – Total On-Route Infrastructure Costs, BEB Depot and On-Route Charging Scenario



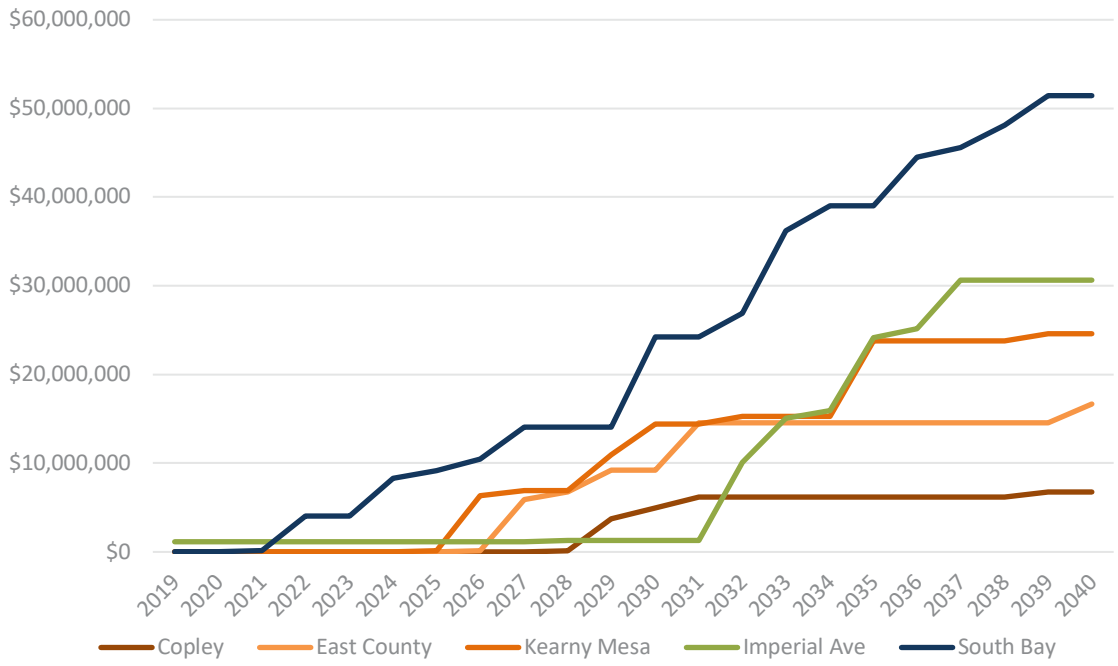
On-route charging infrastructure costs are incremental to depot charging infrastructure costs. The total combined on-route and depot charging infrastructure costs are shown in **Table 35** and cumulative annual infrastructure costs for the BEB Depot and On-Route Charging Scenario are shown in

Figure 43. The total combined infrastructure costs for the BEB Depot and On-Route Charging scenario is approximately $131 million.

Table 35 – Total Infrastructure Costs, BEB Depot and On-Route Charging Scenario

Division	Cost
Copley	$ 6,756,000
East County	$ 16,675,000
Kearny Mesa	$ 25,974,000
Imperial Ave	$ 30,642,000
South Bay	$ 51,443,000
Total	**$ 131,489,000**

Figure 43 – Cumulative Total Infrastructure Costs, BEB Depot and On-Route Charging



Hydrogen Fuel Cell Infrastructure Scenarios

To define the timeline and costs to build-out hydrogen fueling infrastructure, we break the scope of work into four key project types: (1) planning, (2) structural, (3) maintenance bay upgrades, and (4) fueling. Rather than building out the infrastructure all at once, projects are sized and scheduled to meet the near-term fueling requirements.

CTE worked with Fiedler Group to develop the cost assumptions for FCEB infrastructure, summarized in the table below. Proposed depot layouts and the final report for depot upgrades prepared by Fiedler Group, is provided in **Appendix B – Depot Site Plans, FCEB Infrastructure.**

Table 36: FCEB Infrastructure Planning Assumptions

Project	Cost Estimate	Source
Infrastructure Planning	$150,000 per division	Engineer's estimate
50-Bus Incremental Mechanical Equipment and Installation Package	Varies by facility; Includes design, permitting, and installation for two (2) dispensers; all mechanical process equipment; electrical utilities and switchgear. Excludes storage tanks.	Engineer's estimate, vendor quotes
Incremental Addition of 15,000 Liquid Hydrogen Tank	$290,000 per tank for installation	Engineer's estimate, vendor quotes
Maintenance Upgrades	Electrical, Lighting, Ventilation, and Gas Detection - $125,000 per bay for depots that do not service CNG - $50,000 per bay for depots that currently service CNG	Engineer's estimate

FCEB Only

The FCEB scenario assumes that FCEBs are utilized where based, on analysis, they meet daily service requirements. The following estimates calculate necessary hydrogen infrastructure costs to support a fleet of 791 FCEBs in 2040, including 191 hydrogen powered cutaways. See **Appendix B – Depot Site Plans, FCEB Infrastructure**, which includes proposed site plans, detailed breakdown of required equipment and project phasing.

Planning Projects

The build-out of hydrogen infrastructure will require planning at each division. It is assumed that each planning project will cost $150,000, occurring as shown in the table below, and only once per division. Total planning projects for five divisions total approximately $750,000.

Table 37 – Planning Projects, FCEB Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley										1													1
East County								1															1
Kearny Mesa							1																1
Imperial Ave				1																			1
South Bay					1																		1
Total				1	1		1	1		1													5

50-Bus Mechanical Projects

For hydrogen fueling equipment, it is economical to package projects in 50-bus increments with all necessary mechanical and fueling components included, except for liquid hydrogen storage tanks. Storage tanks can be added in a modular fashion as demand increases, separately from other fueling components The 50-bus mechanical projects include:

1. Two dispensers, though additional dispensers may be added
2. All mechanical process equipment and hydrogen wetted components
3. Design, engineering, and permitting
4. Construction costs
5. Demolition of existing pavement, and excavation
6. Installation of new equipment foundations
7. All electrical conduit, conductors and termination
8. Emergency Shut Down and Notification system
9. Mechanical installation
10. Electrical utilities and switchgear

Table 38 shows the estimated mechanical project costs by year and division. Costs vary per project in a given year due to the scale of the implementation at each division. Buildout of mechanical infrastructure at each division are grouped into no more than three phases to minimize disruption of service and capital expenses. The total cost of mechanical projects to support the FCEB Only scenario is approximately $63 million, spread over 12 different projects.

Table 38 – 50-Bus Mechanical Projects Cost, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley												8.6				3.6							**12.3**
East County										4.3				3.6									**7.9**
Kearny Mesa									4.3				3.6										**7.9**
Imperial Ave						4.3									6.5				4.3				**15.1**
South Bay							8.6									6.5						4.3	**19.4**
Total						**4.3**	**8.6**		**4.3**	**4.3**		**8.6**	**3.6**	**3.6**	**6.5**	**10.1**			**4.3**			**4.3**	**62.6**

Storage Capacity Projects

Storage capacity projects include the incremental addition of one or more 15,000-gallon liquid hydrogen storage tanks. Tanks are sized at 15,000 gallons to accommodate one truckload of liquid hydrogen, or approximately 3,000 kg. Storage capacity projects can be built in conjunction with a 50-bus mechanical project wherever possible, but can also occur on their own as necessary as the FCEB fleet grows at a given division. The required capacity of hydrogen storage at a given depot is sized to accommodate an approximate 4-day supply of average daily fuel use. **Table 39** shows the planned storage capacity projects and costs by year and division. Costs shown include installation when not accompanied by a mechanical project. A standalone, single-tank project costs approximately $290,000. The total storage capacity projects will cost approximately $5 million over the life of the study.

Table 39 – Storage Capacity Projects Cost, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Copley												0.58											**0.58**
East County										0.29				0.29									**0.58**
Kearny Mesa									0.29				0.29					0.44					**1.02**
Imperial Ave						0.29									0.58				0.58				**1.45**
South Bay							0.87									0.58							**1.45**
Total						**0.29**	**0.87**		**0.29**	**0.29**		**0.58**	**0.29**	**0.29**	**0.58**	**0.58**		**0.44**	**0.58**				**5.08**

Maintenance Bay Upgrade Projects

Maintenance bays at each depot will require hydrogen detection and exhaust equipment to ensure safety. **Table 40** indicates the timing and location of upgrade projects, as well as the number of bays that require upgrades at each division. A total of 84 maintenance bays will require upgrades.

Table 40 – Hydrogen Maintenance Bay Upgrade Projects, FCEB Only Scenario

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Totals
Copley											10												**10**
East County									12														**12**
Kearny Mesa								20															**20**
Imperial Ave					15																		**15**
South Bay						27																	**27**
Total					**15**	**27**		**20**	**12**		**10**												**84**

Table 41 shows the associated project costs for the upgrades. A total of approximately $5 million is required to upgrade all 84 maintenance bays. We assume a cost of $50,000 per maintenance bay to retrofit CNG facilities for hydrogen buses at East County, Imperial Avenue, Kearny Mesa and South Bay. At Copley, which does not currently service any CNG buses, we assume $125,000 per bay for the required upgrades. This cost comes from requirement of additional ventilation systems; CNG facilities have the required ventilation systems already installed.

Table 41 – Maintenance Bay Upgrade Project Costs, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Totals
Copley												1.3											**1.3**
East County										0.6													**0.6**
Kearny Mesa									1.0														**1.0**
Imperial Ave						0.8																	**0.8**
South Bay							1.4																**1.4**
Total						**0.8**	**1.4**		**1.0**	**0.6**		**1.3**											**5.0**

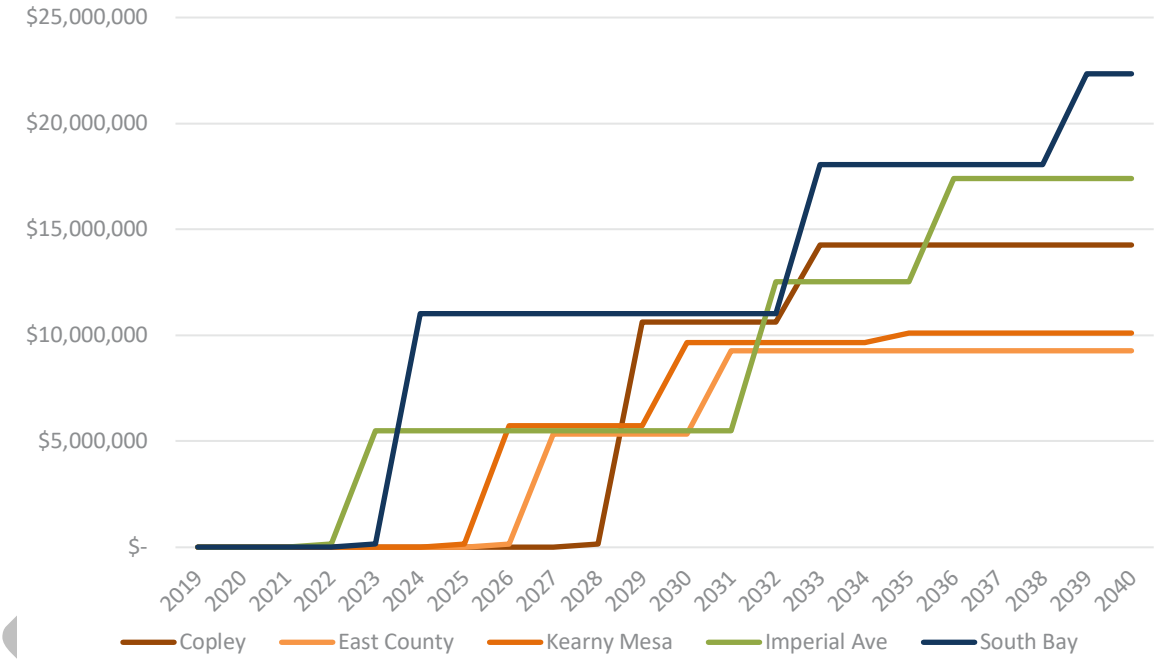
FCEB Only Infrastructure Summary

Table 42 provides the total infrastructure costs for the FCEB Only scenario for the transition. The total buildout of required FCEB infrastructure will require approximately $73 million for the FCEB Only scenario. **Figure 44** shows a cumulative summary by year and division.

Table 42 – Total Infrastructure Costs, FCEB Only Scenario

Division	Cost
Copley	$ 14,265,000
East County	$ 9,274,000
Kearny Mesa	$ 10,109,000
Imperial Ave	$ 17,403,000
South Bay	$ 22,344,000
Total	**$ 73,394,000**

Figure 44 – Cumulative Infrastructure Costs, FCEB Only Scenario

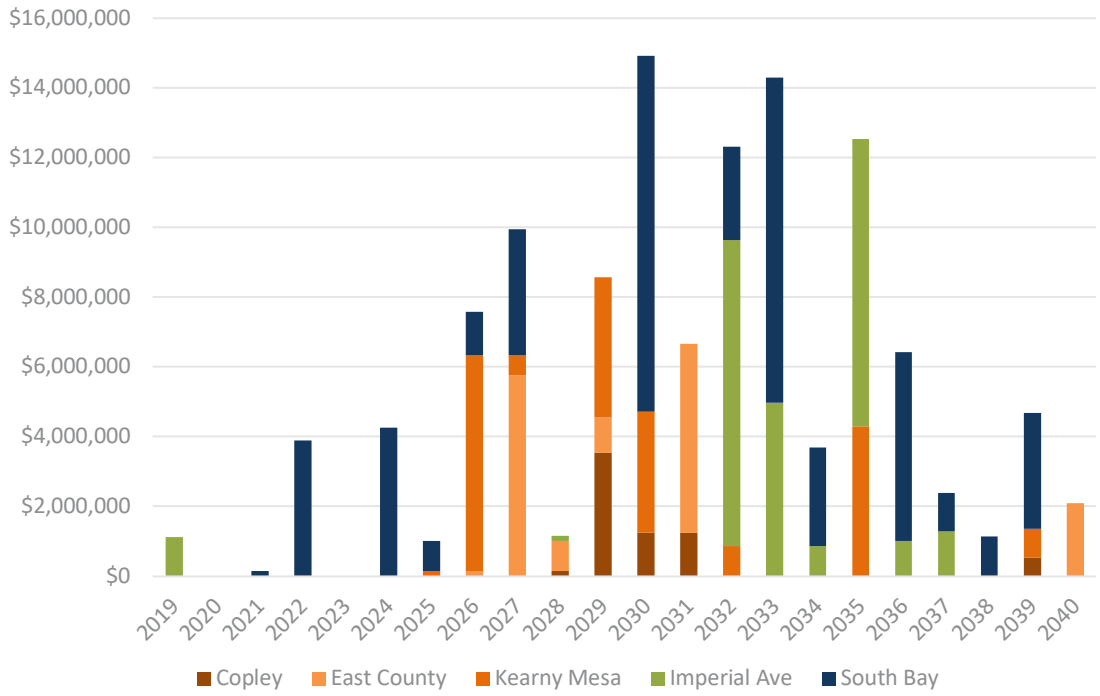


Mixed BEB and FCEB Scenario

In the Mixed BEB and FCEB scenario, charging infrastructure is required to service a total of 640 BEBs in addition to hydrogen fueling infrastructure to service 151 FCEBs across all five depots, including 108 hydrogen powered cutaways. A small number of vehicles will remain propane by 2040 but will ultimately transition to FCEB during the next replacement cycle.

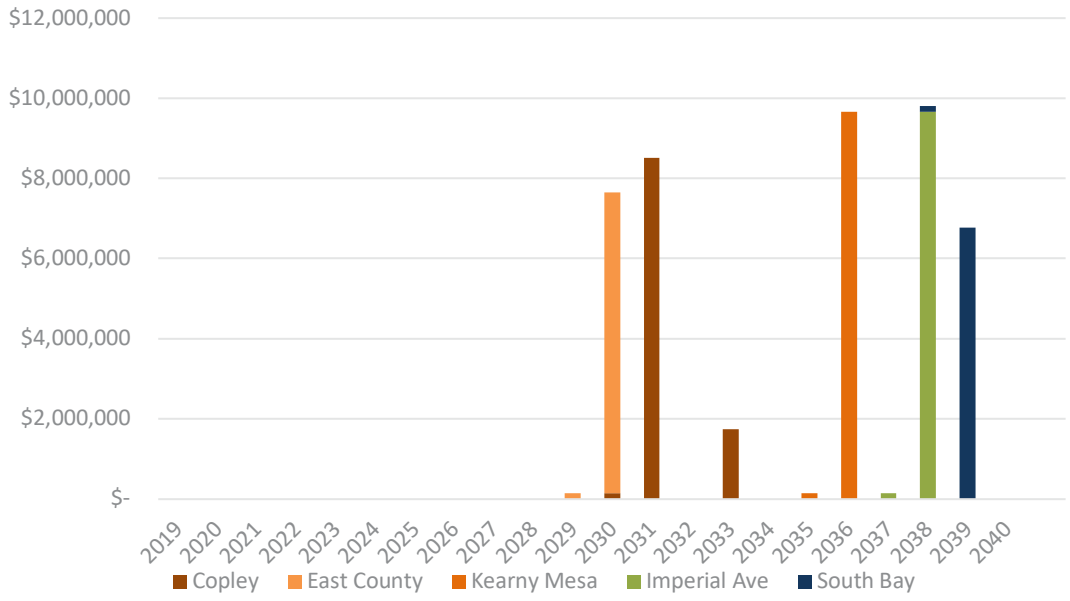
BEB charging infrastructure necessary to support the Mixed BEB and FCEB scenario mimics the costs provided in the BEB Depot-Only Charging scenario. The total infrastructure costs, by division and year, for BEB deployment are detailed on **Figure 45**.

Figure 45 - Annual BEB Infrastructure Costs, Mixed BEB and FCEB Scenario



In addition to BEB charging, hydrogen fueling is required to support the Mixed BEB and FCEB scenario. The FCEB fueling costs are developed as discussed in the FCEB Only scenario where the scope of work is broken into four (4) key project types: (1) planning, (2) structural, (3) maintenance bay upgrades, and (4) fueling. Infrastructure is built out over time as necessary to support FCEB deployment. Annual costs for the FCEB infrastructure portion of the mixed fleet are provided in **Figure 46**.

Figure 46 - Annual FCEB Infrastructure Costs, Mixed BEB and FCEB Scenario



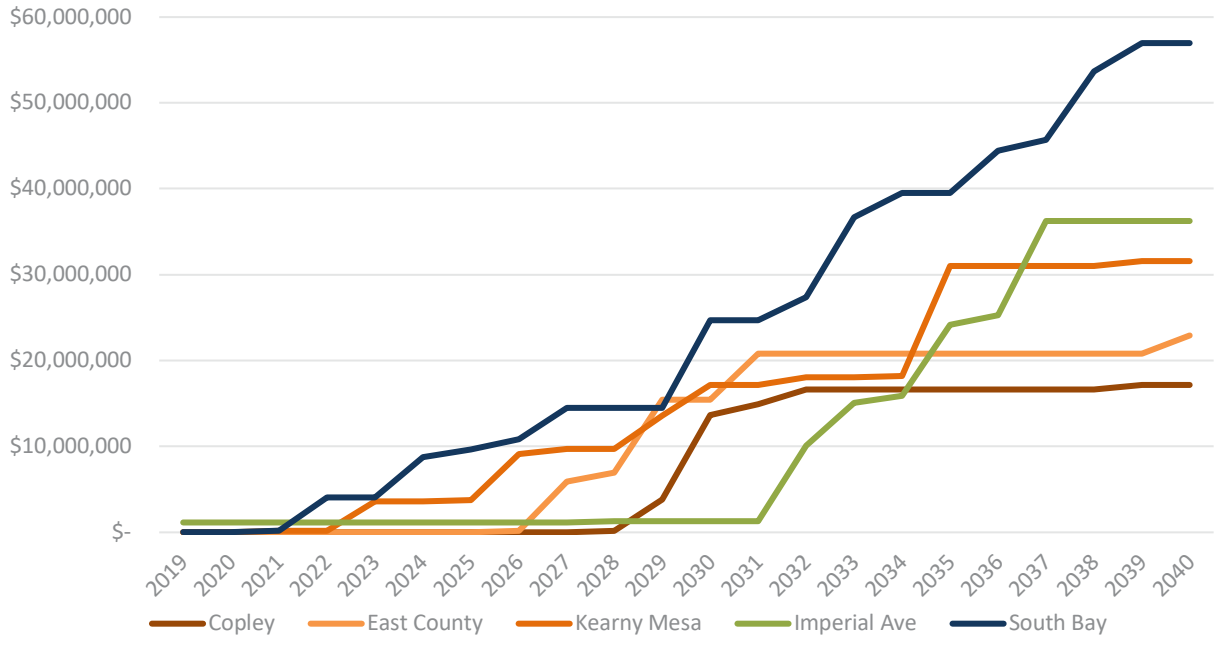
Mixed BEB and FCEB Infrastructure Summary

Table 43 provides the total infrastructure costs for the Mixed BEB and FCEB scenario for the transition. This total buildout of required BEB and FCEB infrastructure is expected to require approximately $165 million. **Figure 47** provides cumulative infrastructure costs for the Mixed BEB and FCEB scenario by year and division.

Table 43 - Total Infrastructure Costs, Mixed BEB and FCEB Scenario

Division	Cost
Copley	$ 17,166,000
East County	$ 22,927,000
Kearny Mesa	$ 31,590,000
Imperial Ave	$ 36,258,000
South Bay	$ 56,975,000
Total	**$ 164,915,000**

Figure 47 - Cumulative Infrastructure Costs, Mixed BEB and FCEB Scenario



Facilities Assessment Cost Comparison

The Facilities Assessment includes all infrastructure-related costs over the transition for each scenario. **Figure 48** shows the cumulative infrastructure costs for each scenario. **Table 44** shows the combined total costs and percent ZEB fleet in 2040. Note that the percent increase over baseline is not provided in the table as the Baseline is assumed to be zero as additional infrastructure is not required to operate the fleet in the current makeup.

Figure 48 - Total Costs, Facilities Assessment

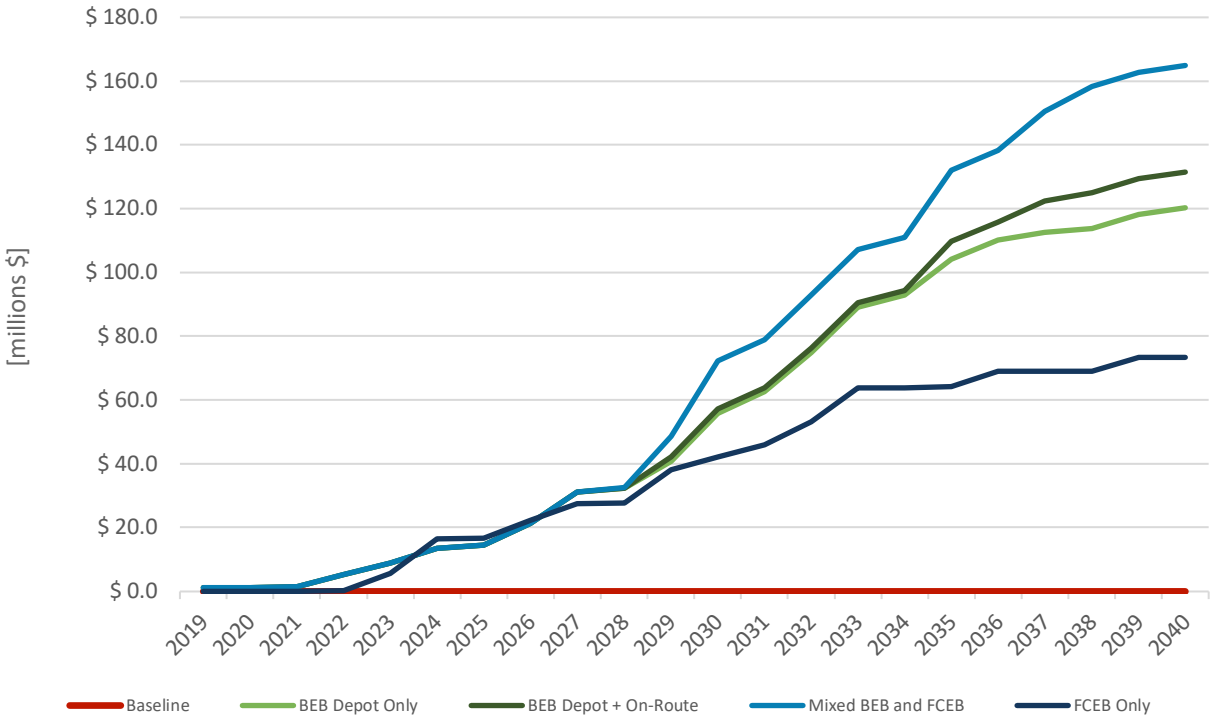


Table 44 - Total Costs, Facilities Assessment

Scenario	Cost	% Cost Increase Over Baseline	% ZEB in 2040
Baseline	$ ----	----	2%
BEB Depot Only	$ 120,305,000	NA	77%
BEB Depot + On-Route	$ 131,489,000	NA	84%
FCEB Only	$ 73,394,000	NA	95%
Mixed BEB and FCEB	$ 164,915,000	NA	95%

Maintenance Assessment

One of the anticipated benefits of moving to a BEB or FCEB fleet is maintenance costs. Conventional wisdom indicates that a transit agency may attain 30% to 50% in maintenance cost savings for a BEB. This is due to the fact that there are fewer fluids to replace (no engine oil or transmission fluid), fewer brake changes due to regenerative braking, and far fewer moving parts than on a internal combustion engine bus. However, the savings in traditional maintenance costs may be offset by the cost of battery or fuel-cell replacements over the life of the vehicles.

There is limited data available on early deployments and many early deployments are from new manufacturers where production quality issues manifest as maintenance issues. Internal combustion engine vehicle labor and maintenance costs includes CNG, Propane and Diesel and is provided by MTS. BEB labor and maintenance cost comes from analysis completed by the U.S. DOE National Renewable Laboratory (NREL). There is limited information available regarding maintenance costs for FCEBs due to the limited number of vehicles in operation in the United States. Much of the information comes from AC Transit, which is the largest FCEB fleet in the country. Unfortunately, these buses are older models that require a significant amount of maintenance. In addition, the buses are out of warranty and support from the European manufacturer is expensive. As a result, rather than use artificially high costs for older model FCEBs, maintenance costs associated with CNG buses were used as a replacement based on similarities between the vehicles. In addition to labor and materials, the cost impact of mid-life overhauls for major components for each type of bus is also estimated. **Table 45** shows the assumed costs of scheduled and unscheduled labor and maintenance used in this analysis.

Table 45 – Labor and Materials Cost Assumptions

Type	Estimate	Source
Internal combustion engine	$1.05/mi, including tires	MTS
BEB	$0.74/mi	U.S. DOE NREL
FCEB	$1.05/mi including tires	MTS/CTE

In addition to Labor and Maintenance, the cost impact of mid-life overhauls of major components for each type of bus are estimated. Assumptions used in this analysis are given in **Table 46.** These costs are from MTS for internal combustion engine buses and for BEB and FCEB, mid-life overhaul cost estimates are provided by vehicle OEMs.

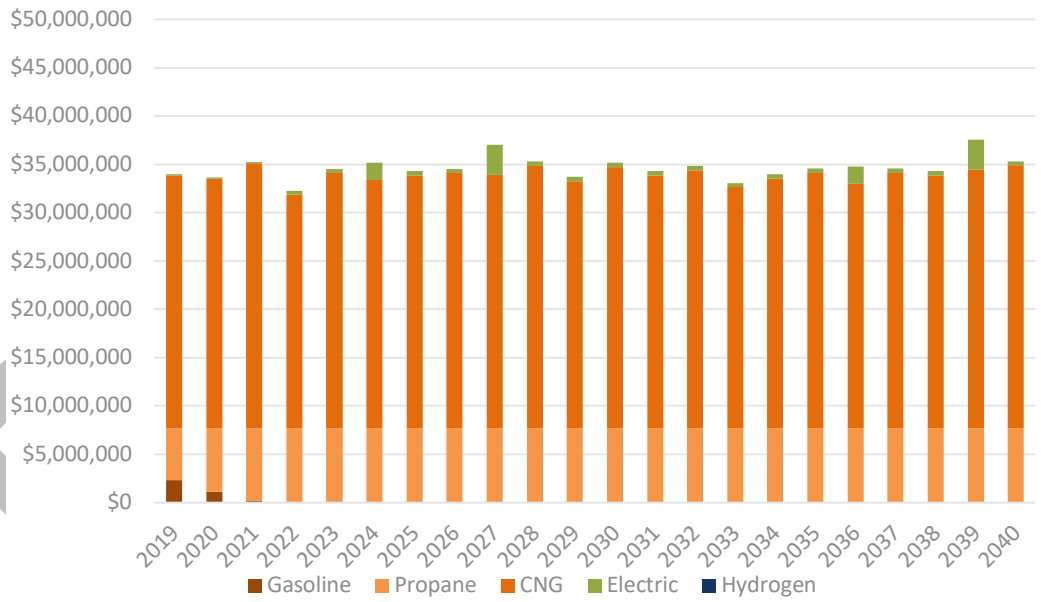
Table 46 – Mid-Life Overhaul Cost Assumptions

Type	Overhaul Scope	Estimate	Source
Internal combustion engine	Engine/Transmission Overhaul	$50k per bus	MTS
BEB	Battery Replacement	$500 per kWh	Bus OEM
FCEB	Battery Replacement Fuel Cell Overhaul	$500 per kWh $40k per bus	Bus OEM Fuel Cell OEM

Baseline

The baseline assumes no changes to MTS' current fleet configuration throughout the life of the study, i.e. no ZEB purchases other than those already planned, and is used for comparative analysis. **Figure 49** shows the combined labor, materials and mid-life overhaul costs for the Baseline scenario fleet projection for each year of the study, in 2019 dollars. Annual fleet maintenance costs average approximately $35 million per year.

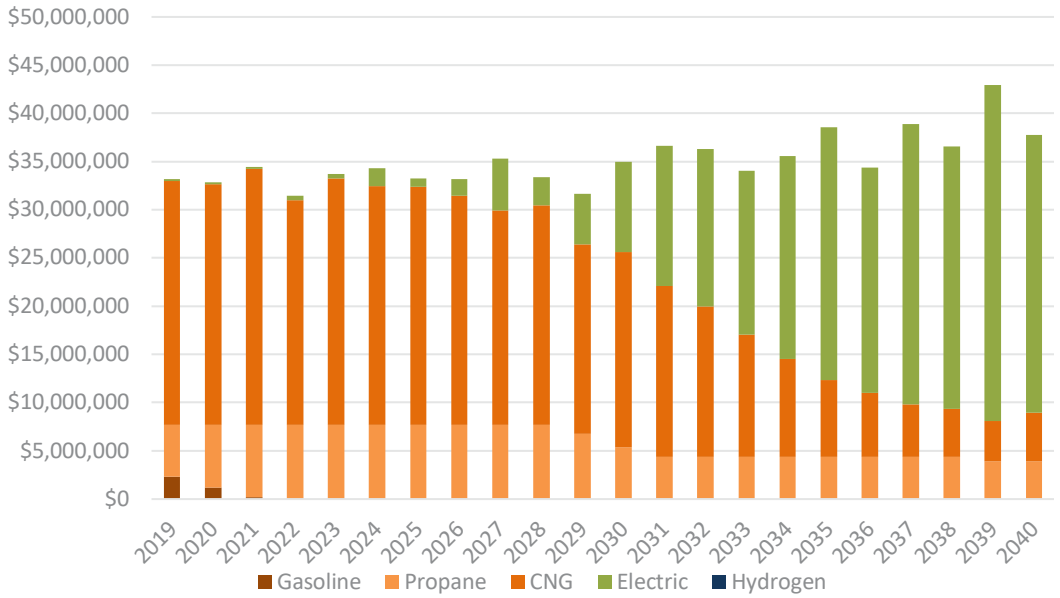
Figure 49 – Annual Fleet Maintenance Costs, Baseline



BEB Depot-Only Charging

Figure 50 shows the combined labor, materials and mid-life overhaul costs for the BEB Depot-Only Charging scenario for each year of the transition, in 2019 dollars.

Figure 50 – Annual Fleet Maintenance Costs, BEB Depot-Only Scenario



BEB Depot and On-Route Charging

Figure 51 shows the combined labor, materials and mid-life overhaul costs for the BEB Depot and On-Route Charging scenario for each year of the transition, in 2019 dollars.

Figure 51 – Annual Fleet Maintenance Costs, BEB Depot and On-Route Scenario

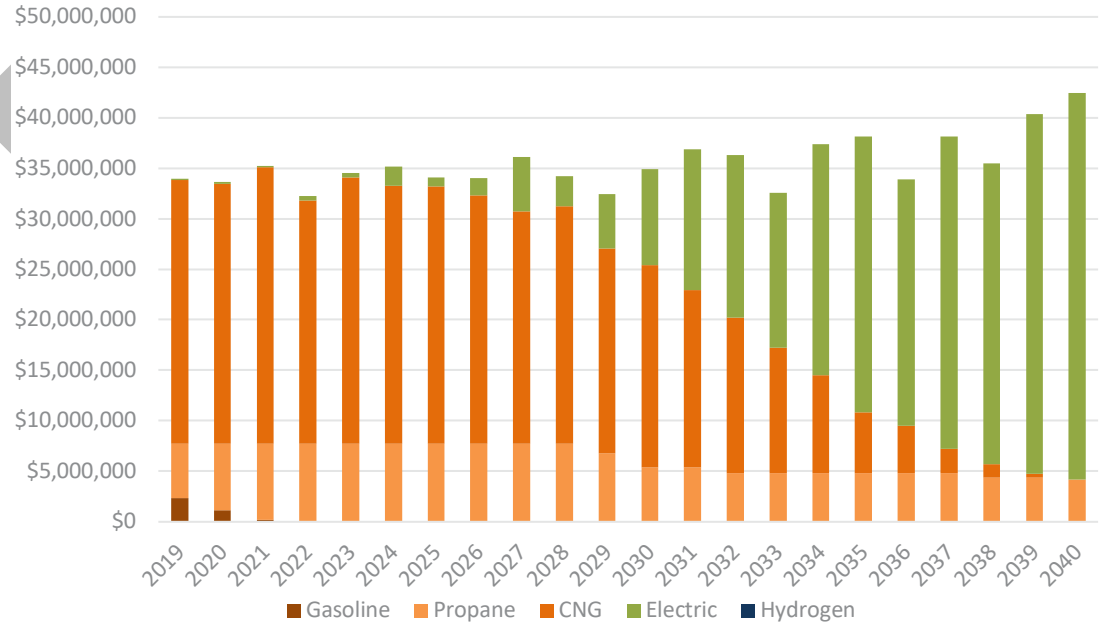
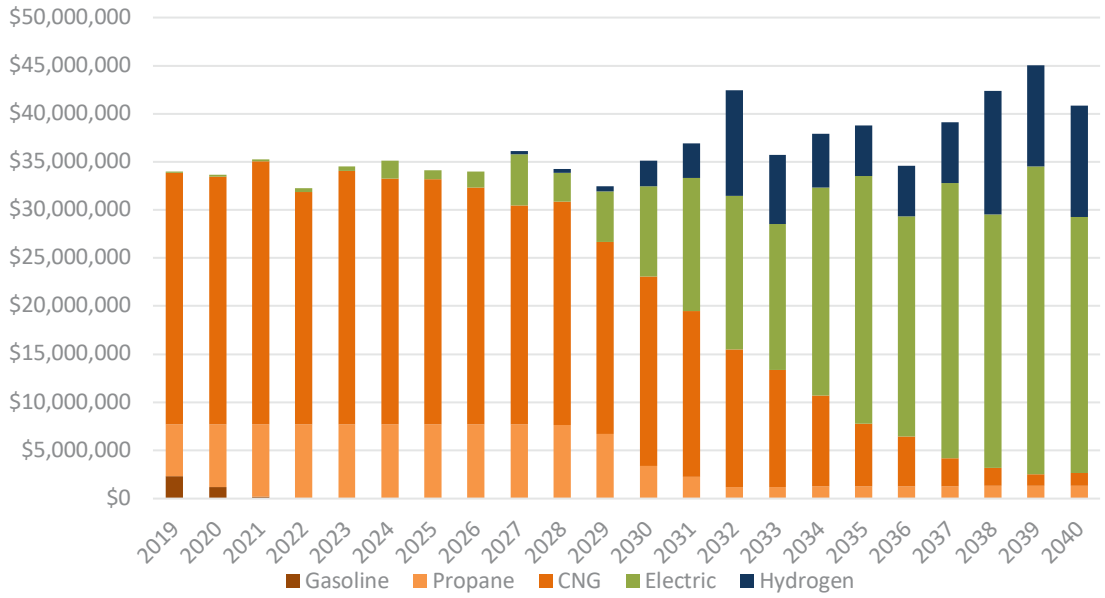


Figure 52 shows the combined labor, materials and mid-life overhaul costs for the Mixed BEB and FCEB scenario for each year of the transition, in 2019 dollars.

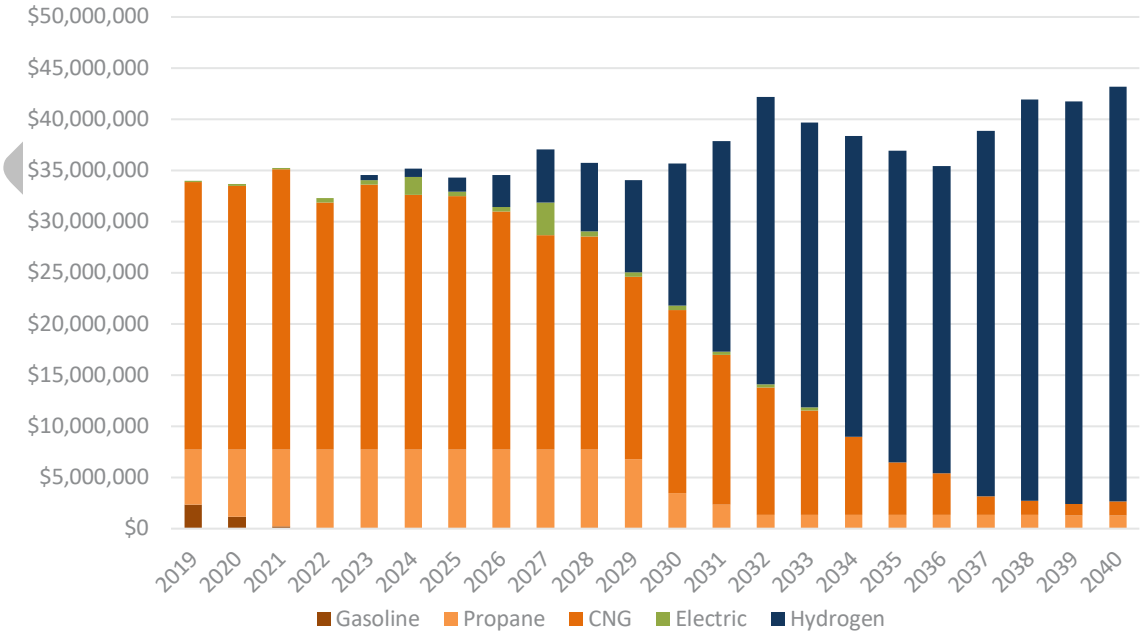
Figure 52 – Annual Fleet Maintenance Costs, Mixed Scenario



FCEB Only

Figure 53 shows the combined labor, materials and mid-life overhaul costs for FCEB Only scenario for each year of the transition, in 2019 dollars.

Figure 53 - Annual Maintenance Costs, FCEB Only Scenario



Maintenance Assessment Cost Comparison

The Maintenance Assessment includes all labor, materials and overhaul costs over the transition for each scenario. **Figure 54** shows the cumulative maintenance costs for each scenario. **Table 47** shows the combined total costs and the incremental cost over the Baseline.

Figure 54 – Total Costs, Maintenance Assessments

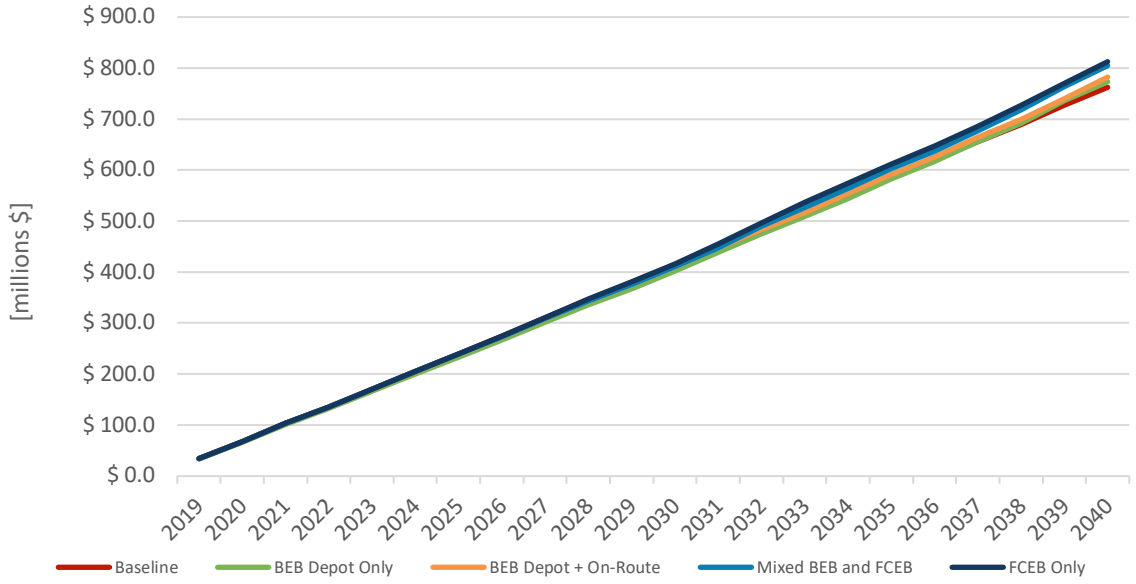


Table 47 – Total Costs, Maintenance Assessments

Scenario	Cost	% Cost Increase Over Baseline	% ZEB
Baseline	$ 762,263,000	----	2%
BEB Depot Only	$ 773,287,000	1%	77%
BEB Depot + On-Route	$ 782,339,000	3%	84%
FCEB Only	$ 812,484,000	7%	95%
Mixed BEB and FCEB	$ 804,691,000	6%	95%

Total Cost of Ownership Assessment

The Total Cost of Ownership Assessment complies and organizes the results from the Fleet, Fuel, Facilities and Maintenance assessments to show total and annual costs throughout the transition. It includes selected capital and operating costs of each transition scenario over the transition timeline. There may be other costs incurred (i.e., incremental operator and maintenance training); however, these four assessment categories are the key drivers in ZEB transition decision-making. Redundancy, external battery storage, battery recycling, and potential costs associated with a new depot that may be required to support ZEB deployment are not included in this analysis but are important considerations that will also be factored in during the transition.

It is important to note, there is no cost escalation assumed, nor do we assume any cost reduction due to economies of scale for ZEB technology, because there is no historical basis for this assumption. Future changes to MTS' service level, depot locations, route alignments, block scheduling, etc. are unforeseen. The sections below provide best estimates using the information currently available, and using the culmination of assumptions explained throughout this study.

Costs by Scenario

The following sections show total costs per scenario, broken down by assessment type.

Baseline

The Baseline scenario is used for comparative purposes only. It assumes no changes to the agency's current fleet configuration throughout the life of the study, i.e. no ZEB-related purchases. **Table 48** shows the fleet, fuel, facilities and maintenance costs for the Baseline scenario in 2019 dollars. MTS's total operating and capital costs are an estimated $1.82 billion from 2019 to 2040. There are no facilities costs for this scenario. Since we assume MTS will not be adding any additional buses (ZEB or internal combustion engine), other than those that are already included in the baseline scenario, no additional facilities are required.

Table 48 – Total Costs, Baseline [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	25.0	29.9	49.5	60.7	43.4	16.7	32.0	30.4	34.7	46.8	23.0	40.4	25.0	37.4	62.1	36.0	43.9	16.7	**808**
Fuel	11.3	11.2	11.2	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	**253**
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Maintenance	34.0	33.7	35.3	32.3	34.5	35.2	34.3	34.5	37.0	35.3	33.7	35.2	34.3	34.8	33.1	34.0	34.6	34.8	34.6	34.3	37.6	35.3	**762**
Total	**74.1**	**78.3**	**85.3**	**97.2**	**71.1**	**76.6**	**95.3**	**106.7**	**92.0**	**63.5**	**77.2**	**77.2**	**80.5**	**93.1**	**67.6**	**85.9**	**71.1**	**83.7**	**108.2**	**81.8**	**92.9**	**63.6**	**1,823**

BEB Depot-Only Charging

Table 49 shows the combined fleet, fuel, facilities and maintenance costs for the BEB Depot-Only Charging scenario in 2019 dollars. The total estimated combined cost is approximately $2.28 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 640 BEBs in service by 2040.

Table 49 – Total Costs, BEB Depot-Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	71.8	61.6	25	46.8	49.9	48.1	71.7	37.7	58.6	41.3	57.3	88.5	58.7	67.3	29.8	1,086
Fuel	11.1	11.2	11.2	11.4	11.2	11.1	11.3	11.6	11.8	12	12.8	14.2	14.3	14.5	15.2	15.6	16.1	16.3	16.3	16.4	16.2	16.4	298
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.2	8.4	15.1	6.7	12.3	14.3	3.7	11.4	6.0	2.4	1.2	4.4	2.1	120
Maintenance	33.2	32.8	34.4	31.5	33.7	34.3	33.3	33.2	35.3	33.4	31.7	35	36.6	36.3	34	35.6	38.6	34.4	38.9	36.6	42.9	37.8	773
Total	74.3	77.5	84.7	100	77.8	84	100	123	119	71.6	99.6	114	106	135	101	113	107	114	146	113	131	86	2,278

BEB Depot and On-Route Charging

Table 50 shows the combined fleet, fuel, facilities and maintenance costs for the BEB Depot and On-Route Charging scenario in 2019 dollars. The total estimated combined cost is approximately $2.33 billion over the length of the transition, from 2019 to 2040. The additional cost of approximately $56 million over the BEB Depot-Only Charging scenario is attributed to additional capital and operational expenses from the additional 60 on-route-charged buses; this scenario estimates a total of 700 total BEBs in service by 2040.

Table 50 – Total Costs, BEB Depot and On-Route Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	71.8	61.6	25	48.8	59.9	38	71.7	37.7	58.6	41.3	67.4	98.5	51.4	70.8	30.5	1,105
Fuel	11.1	11.2	11.2	11.4	11.2	11.1	11.3	11.6	11.8	11.9	13	14.4	14.5	14.6	15.3	15.8	17.7	18	19.1	19.7	19.3	19.4	315
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.2	9.8	15.1	6.7	12.3	14.3	3.7	15.6	6.0	6.6	2.6	4.4	2.1	131
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.1	34	36.1	34.2	32.4	34.9	36.9	36.3	32.6	37.4	38.1	33.9	38.1	35.5	40.4	42.5	782
Total	75.1	78.3	85.6	101	78.6	84.8	101	124	119	72.4	104	124	96	135	99.9	115	113	125	162	109	135	94.5	2,334

FCEB Only

Table 51 shows the combined fleet, fuel, facilities and maintenance costs related to the FCEB Only scenario in 2019 dollars. The total estimated combined cost is approximately $2.70 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 791 FCEBs in service by 2040.

Table 51 – Total Costs, FCEB Only Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	31.6	35.9	57.3	94.9	69.7	28.7	65	84.5	56.5	95.9	45.2	73.5	56.4	93	123	71.6	79.8	39	1,355
Fuel	11.3	11.2	11.2	11.6	11.9	12.2	12.6	15.3	16.9	17.4	19	20.9	22.4	24.1	26.2	28.3	29.2	30	32.1	32.4	32.8	33.8	463
Facilities	0.0	0.0	0.0	0.2	5.5	10.9	0.2	5.7	5.2	0.2	10.5	3.9	3.9	7.0	10.7	0.0	0.4	4.9	0.0	0.0	4.3	0.0	73
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.3	34.5	37	35.7	34.1	35.7	37.9	42.2	39.7	38.4	37	35.4	38.8	41.9	41.7	43.2	812
Total	74.1	78.3	85.3	97.4	83.6	94.1	104	150	129	82	129	145	121	169	122	140	123	163	193	146	159	116	2,704

Mixed BEB and FCEB

Table 52 shows the combined fleet, fuel, facilities and maintenance costs related to the Mixed BEB and FCEB scenario in 2019 dollars. The total estimated combined cost is approximately $2.47 billion over the length of the transition, from 2019 to 2040. This scenario estimates a total of 640 BEBs and 151 FCEBs (791 total ZEBs) in service by 2040.

Table 52 – Total Costs, Mixed Scenario [millions $]

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Total
Fleet	28.8	33.5	38.8	53.4	29.4	33.8	54.7	81.4	60.4	26.3	56.6	69.6	40.1	81.8	37.7	61.4	48.2	77	107	62.9	67.6	31.3	1,181
Fuel	11.1	11.2	11.2	11.4	10.5	10.4	10.5	11.3	12	12.6	13.9	15.2	15.3	15.6	16.3	16.5	18.7	18.9	20	20.3	20	20.3	323
Facilities	1.1	0.0	0.3	3.9	3.5	4.7	1.0	6.8	9.9	1.3	16.1	23.6	6.7	14.1	14.3	3.8	21.0	6.1	12.2	7.9	4.4	2.1	165
Maintenance	34	33.7	35.3	32.3	34.5	35.2	34.1	34	36.1	34.2	32.5	35.1	36.9	42.5	35.8	37.9	38.8	34.6	39.1	42.3	45.1	40.8	805
Total	75.1	78.3	85.6	101	77.9	84.1	100	134	118	74.4	119	143	99.1	154	104	120	127	137	178	133	137	94.5	2,474

Total Estimated Costs

Table 53 provides the detailed cost totals, total cost increase over Baseline, and the percent ZEBs in the fleet in 2040.

Table 53 – Total Cost of Ownership, by Scenario

	Baseline	BEB Depot Only	BEB Depot + On-Route	FCEB Only	Mixed BEB and FCEB
Fleet	$ 808,294,000	$ 1,086,465,000	$ 1,105,467,000	$ 1,355,484,000	$ 1,181,414,000
Fuel	$ 252,569,000	$ 298,234,000	$ 314,657,000	$ 462,731,000	$ 323,380,000
Infrastructure	-----	$ 120,305,000	$ 131,489,000	$ 73,394,000	$ 164,915,000
Maintenance	$ 762,263,000	$ 773,287,000	$ 782,339,000	$ 812,484,000	$ 804,691,000
Total	**$ 1,823,126,000**	**$ 2,278,291,000**	**$ 2,333,952,000**	**$ 2,704,093,000**	**$ 2,474,400,000**
Incremental Cost Over Baseline		**$ 455,165,000**	**$ 510,826,000**	**$ 880,967,000**	**$ 651,274,000**
% ZEB in 2040	**2%**	**77%**	**84%**	**95%**	**95%**

Conclusions and Recommendations

ZEB technologies are in a period of rapid development and change. While the technology is proven in many pilot deployments, it is not yet matured to the point where it can easily replace current fossil-fuel technologies on a large scale. BEBs will require significant investment in facilities and infrastructure and may require changes to service and operations to manage their inherent constraints. On the other hand, FCEBs are believed to provide an operational equivalent to CNG, however, the incremental cost of buses, fueling infrastructure, and fuel places this technology at a serious disadvantage.

CARB's ICT regulation is an achievement toward addressing the challenges of climate change with a goal of 100% zero-emission transit fleets by 2040. However, as demonstrated in this analysis, there will be a substantial cost as well as technical challenges. Transit agencies may be challenged to meet this goal and provide the same level of passenger service. Fortunately, CARB's ruling provides waivers for economic hardship and in the event the current state of depot-charged bus technology does not meet service requirements.

A primary assumption for this analysis is that MTS is unable to increase fleet size due to significant space constraints at their depots and, as a result, vehicles must be replaced on a one-for-one basis. Analysis of additional land purchase and construction of new depot facilities was not part of this analysis. If MTS selects an all BEB strategy, incremental ZEB transitional costs are likely to fall between $455 million for the BEB Depot-Only Charging scenario, where approximately 77% of MTS' fleet is replaced with BEBs by 2040, to $511 million for the BEB Depot and On-Route Charging scenario, where approximately 84% of MTS' fleet is replaced with BEBs by 2040. The difference in incremental cost for these scenarios is a result of more vehicles being transitioned due to the use of on-route charging infrastructure, the incremental cost of the on-route charging infrastructure, as well as higher utility charges as a result of on-route charging because higher demand charges are incurred throughout the on-peak when on-route charging will occur. It should be noted that this analysis includes all vehicle lengths and types (40', 45', 60', and cutaways); however, currently only 40' and 60' BEBs have completed Altoona testing and are applicable under the CARB ICT regulation. The BEB Depot-Only Charging scenario meets the CARB ICT regulation requirements assuming a waiver for depot-charged technology that does not meet service requirements is granted as is clearly detailed in the regulation.

If MTS selects an FCEB Only strategy, incremental ZEB transitional costs are estimated at approximately $881 million for replacement of approximately 95% of the fleet with FCEBs by 2040. The remaining 5% would be replaced during the next vehicle replacement cycle after 2040, as it is anticipated that by 2040, FCEB technology will have advanced such that all MTS service could be completed using FCEBs. A primary assumption for the FCEB analysis is that FCEB vehicles will be available for all vehicle types and lengths during the transition period. In addition, due to the limited deployment of FCEBs in service in the United States, capital costs for vehicles and fuel costs remain high. These costs are expected to come down in the future as more vehicles are deployed; however, there is no basis at this time to make assumptions as to how much they may be reduced. Also, the current experience with FCEB maintenance cost is high due to the fact that much of the data is based on older vehicles that are no longer under

warranty and require the support of a European company. As such, there are more unknowns associated with the incremental costs for the FCEB Only scenario, and costs are likely to be more subject to change. It is expected that the cost of the FCEB Only scenario will come down if a larger number of vehicles and infrastructure is deployed but to what extent is unknown. Significant investments in hydrogen infrastructure will be required and will take years to develop to gain a better understanding of the long-term costs for FCEB Only deployment.

As expected, with an incremental cost of approximately $651 million, the Mixed BEB and FCEB scenario that transitions approximately 95% of MTS' fleet to ZEB by 2040, has an incremental cost that falls between an all BEB and all FCEB deployment. Though the costs are considerably cheaper for a mixed fleet deployment than FCEB Only, there are expected to be complexities with managing the fleet through the transition that would require maintain existing internal combustion engine vehicle infrastructure (CNG, propane, and gasoline), installing new BEB infrastructure, and installing new FCEB fueling infrastructure. Space constraints at the depot will require careful planning if this path is selected. MTS may also experience additional benefits as a result of the transition to ZEBs.

MTS may accumulate ZEB credits from their procurement of ZEBs prior to 2023, although these ZEB credits are not considered in this analysis. These credits can be used in place of ZEB purchases to satisfy CARB's ZEB procurement requirements beginning in 2023. With the purchase of eight (8) BEBs to support the ZEB pilot operations in 2019 and 2020, and the purchase of twelve (12) BEBs to support a new service in 2022, MTS will have twenty (20) ZEB credits that can be applied to ZEB purchase requirements in 2023 and beyond. By early adoption, MTS will be able to better assess BEB technology in their own service and will also be able to monitor the progress in FCEB vehicle and infrastructure development and pricing.

As a result, recommendations for MTS are as follows:

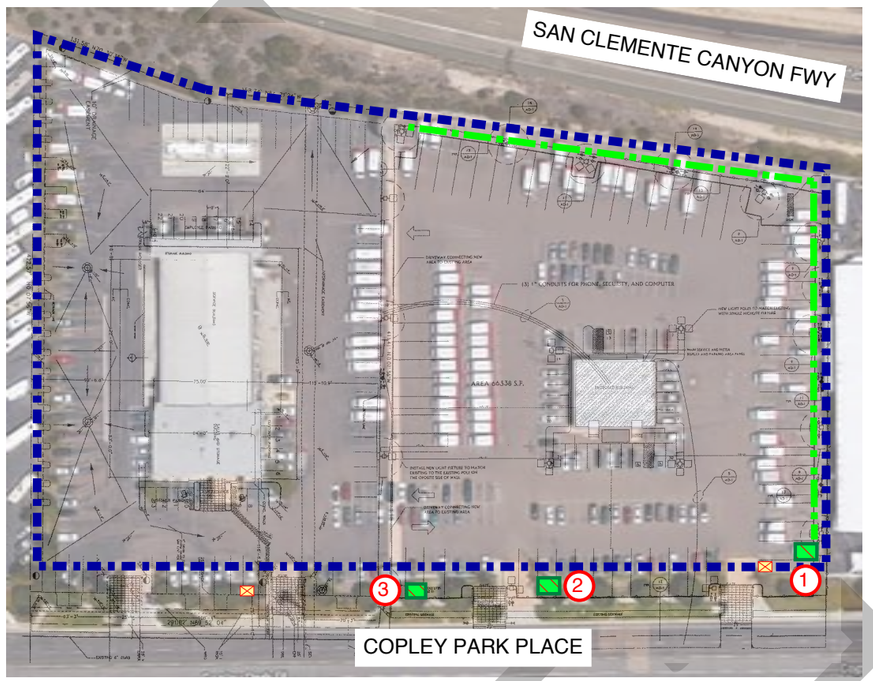
1. **Remain proactive with ZEB deployments:** MTS has been proactive in the purchase and deployment of BEBs through their ZEB Pilot Program. Significantly more development, data collection, and analyses are needed before the technology is ready for fleetwide deployment. For example, BEBs will require charge management software, hardware, and standards to manage the fleetwide transition. For FCEB deployment to be competitive, lower fuel costs that will evolve over time with the production of hydrogen at scale will be required. MTS should move forward carefully, taking advantage of various grant and incentive programs to offset the incremental cost for ZEB deployment. Incentive programs may be eliminated in future years as ZEB procurements are required instead of being optional.
2. **Target specific routes and blocks for early ZEB deployments:** MTS should consider the strengths of given ZEB technologies and focus those technologies on routes and blocks that take advantage of their efficiencies and minimizes the impact of the constraints related to the respective technologies. For example, depot-charged BEBs for shorter routes and blocks, on-route charged BEBs for mid-range routes with layovers at a transit center, and FCEBs for long routes or routes with higher speeds and/or heavier loads. These technologies cannot follow a "one-size-fits-all" approach from either a performance or cost perspective. Matching the technology to the service will be a

critical best practice. Results from the ZEB Pilot Program will help to inform these decisions.

3. **Continue with BEBs and consider FCEBs:** At this stage, it is too early to tell which technology will dominate the market 10 to 20 years from now. Having capability to deploy both ZEB technologies creates an opportunity for MTS to fully assess BEBs and FCEBs to determine which technology can best meet the operational range requirements while being financially efficient and sustainable. MTS should continue to explore possible opportunities and funding mechanisms to deploy FCEBs in service to further their understanding of the technology and how it can fit into the MTS service portfolio.

The transition to ZEB technologies represents a paradigm shift in bus procurement, operation, maintenance, and infrastructure. The technology requires significant development before it is ready to support fleetwide transitions. However, it is only through a continual process of deployment with specific goals for advancement that the industry can achieve the goal of economically sustainable, zero-emission public transit. Ultimately, the ZEB technology that is most efficient and sustainable to operate will evolve into either the majority ZEB solution or the only ZEB solution.

Appendix A – Depot Site Plans, BEB Infrastructure



SITE PLAN - COPLEY BUS MAINTENANCE FACILITY

1" = 100'

N

LEGEND

- EXISTING TRANSFORMER
- POTENTIAL GROUND CHARGER LOCATION (36/35 REQUIRED CHARGING STALLS)
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)

AECOM

Issue Status:
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BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
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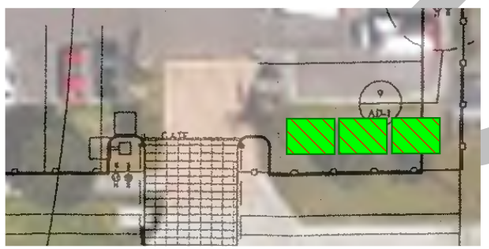
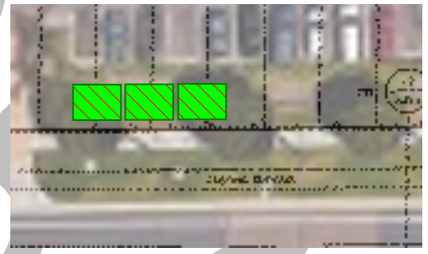


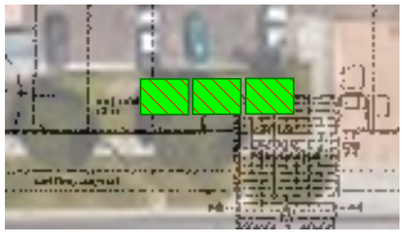
COPLEY - OPPORTUNITY AREA 1

1" = 50'



COPLEY - OPPORTUNITY AREA 2

1" = 50'



COPLEY - OPPORTUNITY AREA 3

1" = 50'

ENLARGED SITE PLANS - EAST COUNTY

1" = 100'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
3 REQUIRED FOR SITE

AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

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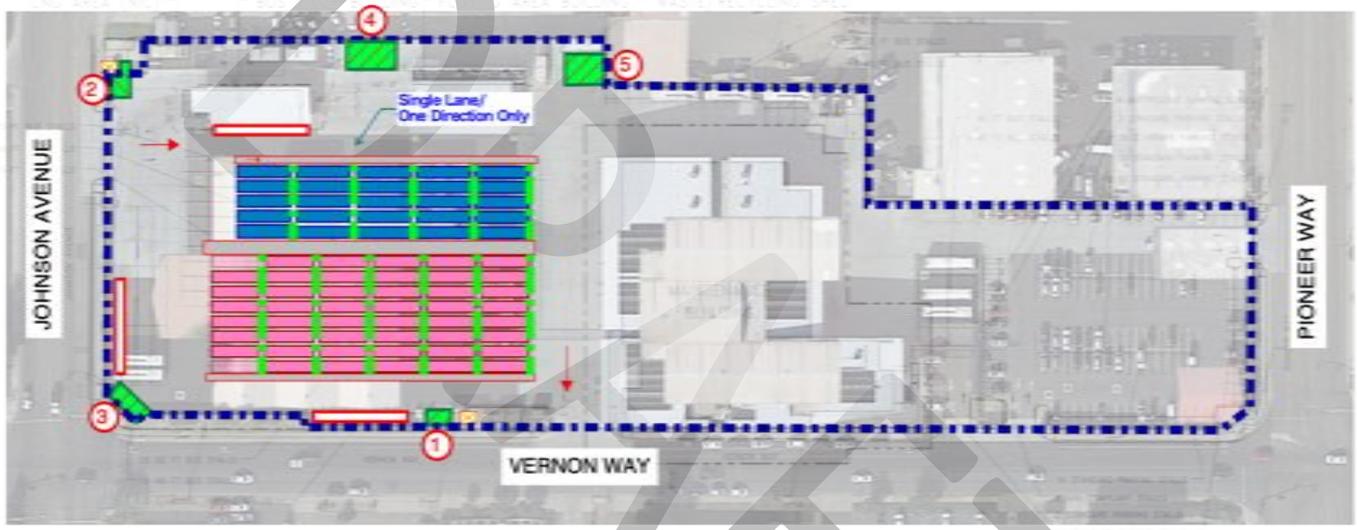

East County		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	3	0
32	0	0
40	51	46
45	24	25
60	0	0
Totals	78	71

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- (1) NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 5' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (6 GANTRIES/8 BUS SPAN, 5 GANTRIES/6 BUS SPAN, 73 CHARGING STALLS)
- 40' BUS PARKING (48 SPACES/46 REQUIRED)
- 45' BUS PARKING (25 SPACES/25 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - EAST COUNTY BUS MAINTENANCE

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
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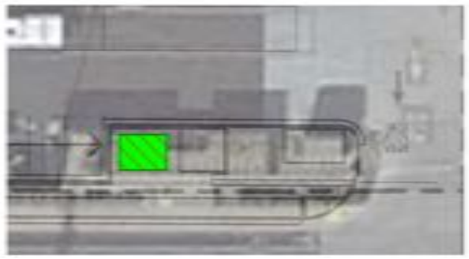
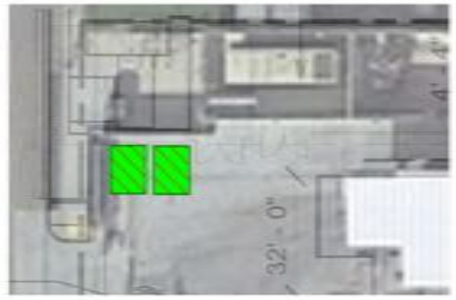


N

EAST COUNTY - OPPORTUNITY AREA 1

1" = 50'



N

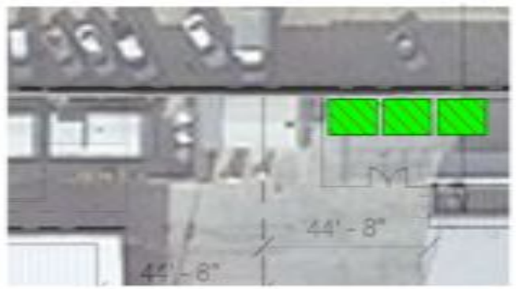
EAST COUNTY - OPPORTUNITY AREA 2

1" = 50'

N

EAST COUNTY - OPPORTUNITY AREA 3

1" = 50'



N

EAST COUNTY - OPPORTUNITY AREA 4

1" = 50'

N

EAST COUNTY - OPPORTUNITY AREA 5

1" = 50'

N

ENLARGED SITE PLANS - EAST COUNTY

1" = 100'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR. 5 REQUIRED FOR SITE

Issue Status:
REPORT PACKAGE

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BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
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Imperial Ave		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	111	98
45	0	0
60	44	31
Totals	155	129

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- ① NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (9 GANTRIES/8 BUS SPAN, 4 GANTRIES/6 BUS SPAN, 2 GANTRIES/6 BUS SPAN w/ 1 STALL CANTILEVER, 4 GANTRIES/5 BUS SPAN, 130 CHARGING STALLS)
- 40' BUS PARKING (98 SPACES/98 REQUIRED)
- 60' BUS PARKING (32 SPACES/31 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - IMPERIAL AVENUE DIVISION

1" = 100'

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
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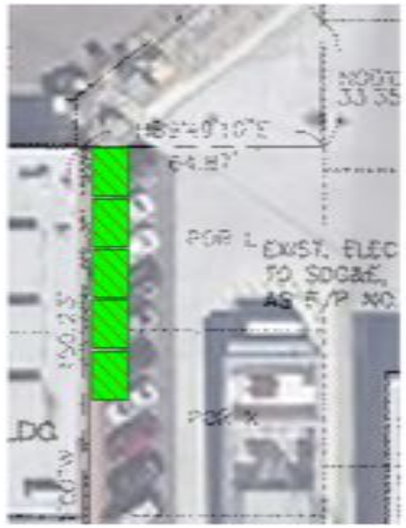
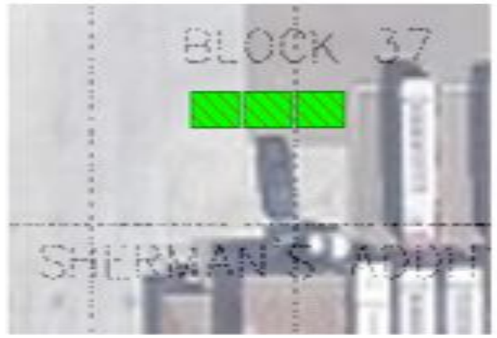


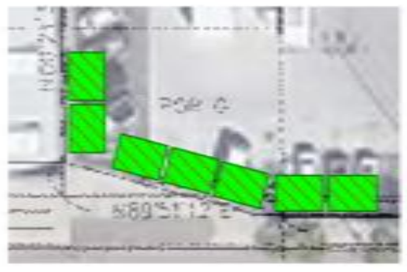
N IMPERIAL AVENUE - OPPORTUNITY AREA 1

1" = 50'



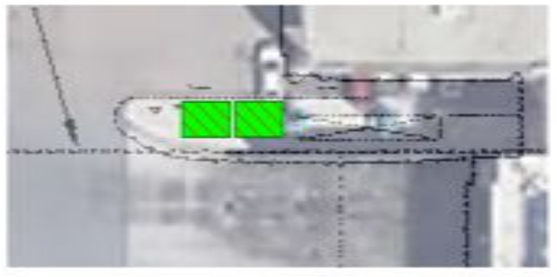
N IMPERIAL AVENUE - OPPORTUNITY AREA 2

1" = 50'



N IMPERIAL AVENUE - OPPORTUNITY AREA 3

1" = 50'



N IMPERIAL AVENUE - OPPORTUNITY AREA 4

1" = 50'

N ENLARGED SITE PLANS - IMPERIAL AVENUE

1" = 100'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR.
11 REQUIRED FOR SITE

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
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Kearny Mesa - Option 1		
Bus Length (ft)	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	85	81
45	0	0
60	42	17
Totals	127	98

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- 1 NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (2 GANTRIES/8 BUS SPAN, 2 GANTRY/8 BUS SPAN w/ 1 BUS CANTILEVER, 9 GANTRIES/6 BUS SPAN, 2 GANTRIES/5 BUS SPAN- 98 CHARGING STALLS)
- 40' BUS PARKING (81 SPACES/81 REQUIRED)
- 60' BUS PARKING (17 SPACES/17 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - KEARNY MESA DIVISION
OPTION 1

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

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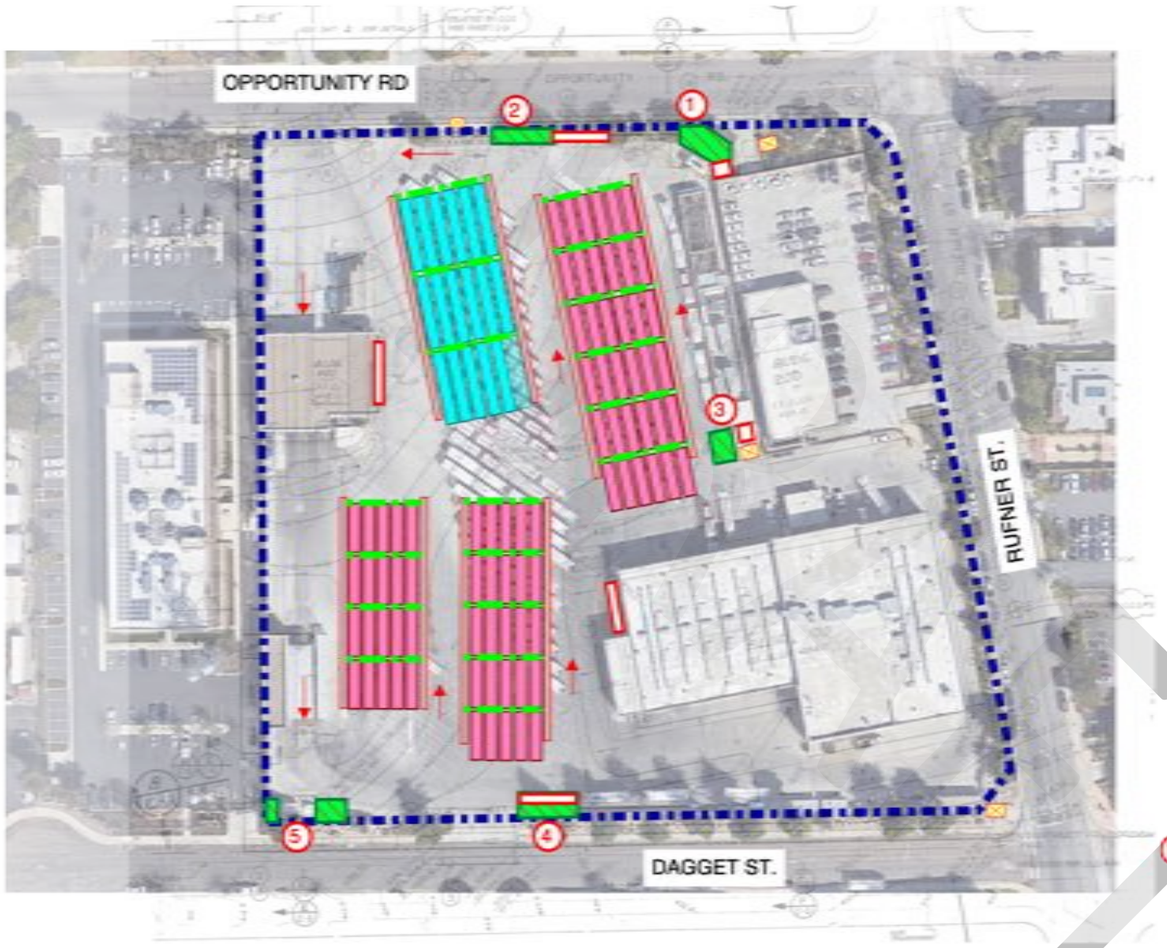


Kearny Mesa – Option 2		
Bus Length [ft]	All Buses	BEBs in 2060
32	0	0
35	0	0
32	0	0
40	80	81
45	0	0
60	41	17
Totals	137	98

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (14 GANTRIES/6 BUS SPAN, 4 GANTRIES/4 BUS SPAN, - 98 CHARGING STALLS)
- 40' BUS PARKING (81 SPACES/81 REQUIRED)
- 60' BUS PARKING (18 SPACES/17 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - KEARNY MESA DIVISION
OPTION 2

1" = 100'

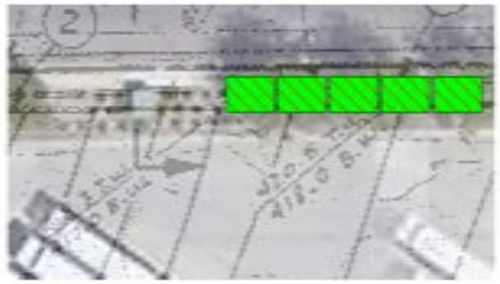
Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ NO.: 60579290 OCTOBER 2019

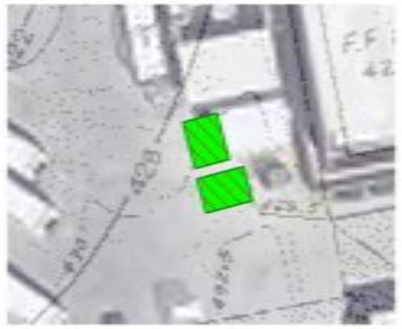
KEARNY MESA - OPPORTUNITY AREA 1

1" = 50'



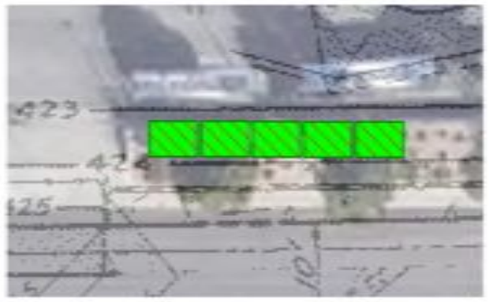
KEARNY MESA - OPPORTUNITY AREA 2

1" = 50'



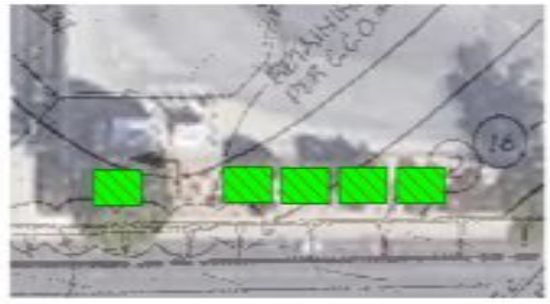
KEARNY MESA - OPPORTUNITY AREA 3

1" = 50'



KEARNY MESA - OPPORTUNITY AREA 4

1" = 50'



KEARNY MESA - OPPORTUNITY AREA 5

1" = 50'

ENLARGED SITE PLANS - KEARNY MESA

1" = 100'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR. 4 REQUIRED FOR SITE

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

A-10

South Bay		
Bus Length [ft]	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- 1 NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 5' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (13 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 1

1" = 100'

AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

A-11

South Bay		
Bus Length [ft]	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- 1 NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 5' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (13 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 2

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

South Bay		
Bus Length [ft]	All Buses	BEBs in 2040
22	0	0
29	0	0
32	0	0
40	221	214
45	0	0
60	39	39
Totals	260	253

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- 1 NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 5' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (5 GANTRIES/8 BUS SPAN, 7 GANTRIES/7 BUS SPAN, 17 GANTRIES/6 BUS SPAN, 255 CHARGING STALLS)
- 40' BUS PARKING (215 SPACES/214 REQUIRED)
- 60' BUS PARKING (40 SPACES/39 REQUIRED)
- DIRECTION OF TRAFFIC

N

SITE PLAN - SOUTH BAY BUS MAINTENANCE FACILITY
OPTION 3

1" = 100'

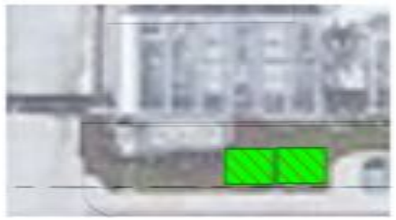
AECOM

Issue Status:
REPORT PACKAGE

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

N SOUTH BAY - OPPORTUNITY AREA 1

1" = 50'

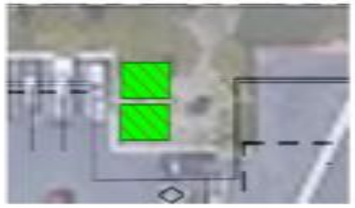


N SOUTH BAY - OPPORTUNITY AREA 2

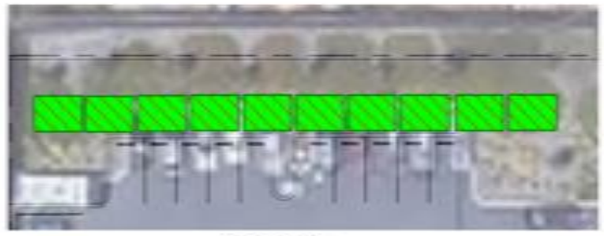
1" = 50'

N SOUTH BAY - OPPORTUNITY AREA 3

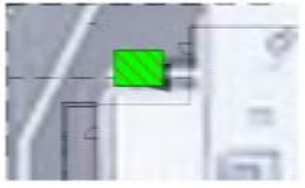
1" = 50'



OPTION 1



OPTION 2



N SOUTH BAY - OPPORTUNITY AREA 4

1" = 50'

N SOUTH BAY - OPPORTUNITY AREA 5

1" = 50'

N SOUTH BAY - OPPORTUNITY AREA 6

1" = 50'

LEGEND

15'-0" X 20'-0" CONCRETE PAD FOR NEW TRANSFORMER AND SWITCHGEAR. 16 REQUIRED FOR SITE

N ENLARGED SITE PLANS - SOUTH BAY

1" = 100'

Issue Status:
REPORT PACKAGE

AECOM

BATTERY ELECTRIC BUS FEASIBILITY STUDY
CONSTRUCTION PHASING SITE PLAN
SAN DIEGO METROPOLITAN TRANSIT SYSTEM,
SAN DIEGO, CA
PROJ. NO.: 60579290 OCTOBER 2019

Appendix B – Depot Site Plans, FCEB Infrastructure

PRELIMINARY HYDROGEN FUELING SITE PLAN

GRAPHIC SCALE: 1" = 30'

VICINITY MAP

SITE NOTES

#	NOTE
	EXISTING ITEMS
0.1	CNG STATION
0.2	DIESEL STATION
0.3	OFFICE/MAINTENANCE BLDG
0.4	MAINTENANCE BLDG
	NEW ITEMS
1.0	(N) HYDROGEN DISPENSER
1.1	(N) HYDROGEN EQUIPMENT COMPOUND

PARKING INFORMATION

	PHASE 1		PHASE 2	
	CAR	BUS	CAR	BUS
EXISTING REMOVED	0	-18	0	0
PROPOSED	0	0	0	0
NET CHANGE	0	-18	0	0

HYDROGEN EQUIPMENT INFORMATION

	PHASE 1	PHASE 2
TOTAL COMPOUND SIZE:	50' X 110'	50' X 120'
TOTAL # OF DISPENSER:	4	5
TOTAL # OF 15,000-GAL LH2 VESSELS	2	2

LEGEND

- PROPOSED PHASE 1 HYDROGEN COMPOUND
- PROPOSED PHASE 2 HYDROGEN COMPOUND
- PROPOSED PHASE 1 HYDROGEN DISPENSER
- PROPOSED PHASE 2 HYDROGEN DISPENSER
- PROPOSED VEHICLE PARKING SETBACK LINE
- APPROX. LOCATION OF PROPERTY LINE
- APPROX. LOCATION OF DISPENSING BUS
- APPROX. LOCATION OF OFFLOAD TRUCK

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NO.	DATE	REVISION DESCRIPTION
1	2/19/2020	GENERAL REVISIONS

DEVELOPMENT INFORMATION:

MTS
COPLEY PARK MAINTENANCE FACILITY (CPMF)

SITE ADDRESS:

7490 COPLEY PARK PL.

SAN DIEGO, CA 92111

DESIGNED BY:	FG PM:
POM	POM
CHECKED BY:	MEP PM:
POF	-
DRAWN BY:	CONSULTANT PM:
POF	-
DATE:	PROJECT NO.:
09/27/2019	16231

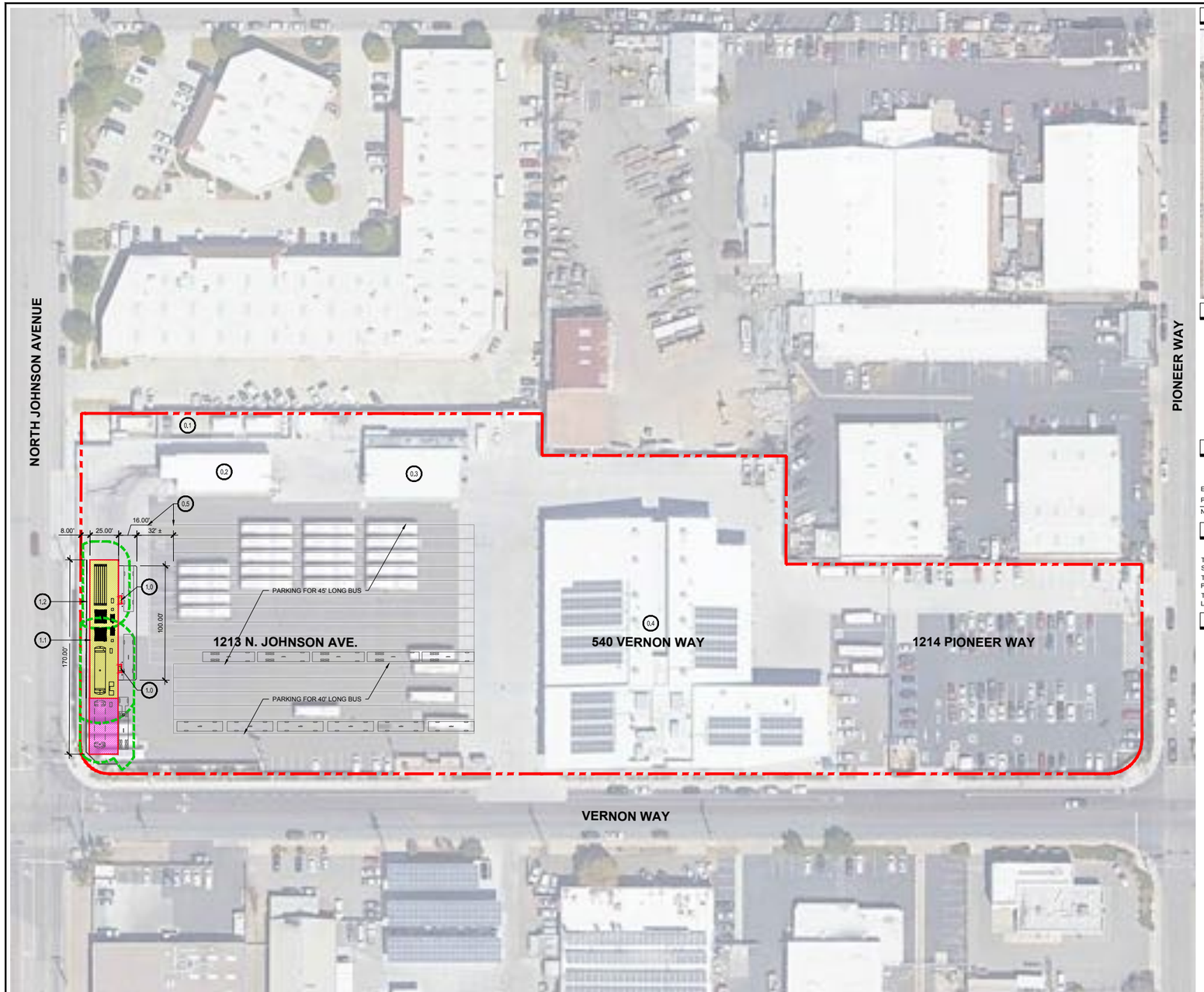
DRAWING TITLE:

PRELIMINARY HYDROGEN FUELING SITE PLAN

SHEET NO.:

SP-1

\\fiedler-project\data\projects\16231\Design\100 Preliminary Design\Preliminary Site Plans\SP-1\SP-1.dwg - PLOTTED: Feb 18, 2020 - 8:51am



PRELIMINARY HYDROGEN FUELING SITE PLAN

GRAPHIC SCALE: 1" = 40'

VICINITY MAP

SITE NOTES

#	NOTE	QUANTITY	REFERENCE
	EXISTING ITEMS		
0.1	(E) CNG FACILITY		
0.2	(E) BUS WASH		
0.3	(E) FUEL AREA BUILDING		
0.4	(E) BUS MAINTENANCE BUILDING		
0.5	(E) BUS PARKING TO BE REMOVED		
	NEW ITEMS		
1.0	(N) DISPENSER		
1.1	(N) HYDROGEN EQUIPMENT COMPOUND		
1.2	(N) FIRE RATED WALL		

PARKING INFORMATION

	PHASE 1			PHASE 2		
	CAR	40' BUS	45' BUS	CAR	40' BUS	45' BUS
EXISTING REMOVED	0	0	-10	0	0	0
PROPOSED	0	0	0	0	0	0
NET CHANGE	0	0	-10	0	0	0

HYDROGEN EQUIPMENT INFORMATION

	PHASE 1	PHASE 2
TOTAL COMPOUND SIZE:	25' X 121'	25' X 170'
TOTAL # OF FUELING POSITION:	2	2
TOTAL # OF 15,000-GAL LH2 VESSELS	1	2

LEGEND

- PROPOSED PHASE 1 HYDROGEN COMPOUND
- PROPOSED PHASE 2 HYDROGEN COMPOUND
- PROPOSED PHASE 1 HYDROGEN DISPENSER
- PROPOSED PHASE 2 HYDROGEN DISPENSER
- PROPOSED VEHICLE PARKING SETBACK LINE
- APPROX. LOCATION OF PROPERTY LINE
- APPROX. LOCATION OF DISPENSING BUS
- APPROX. LOCATION OF OFFLOAD TRUCK

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NO.	DATE	REVISION DESCRIPTION
1	2/28/2020	GENERAL REVISIONS

DEVELOPMENT INFORMATION:

MTS
EAST COUNTY BUS MAINTENANCE FACILITY (ECBMF)

SITE ADDRESS:

1213 N. JOHNSON AVE
@ VERNON STREET
EL CAJON, CA 92020

DESIGNED BY: POM	FG PM: POM
CHECKED BY: POF	MEP PM: -
DRAWN BY: POF	CONSULTANT PM: -
DATE: 9/27/2019	PROJECT NO.: 16231

DRAWING TITLE:

PRELIMINARY HYDROGEN FUELING SITE PLAN

SHEET NO.:

SP-1

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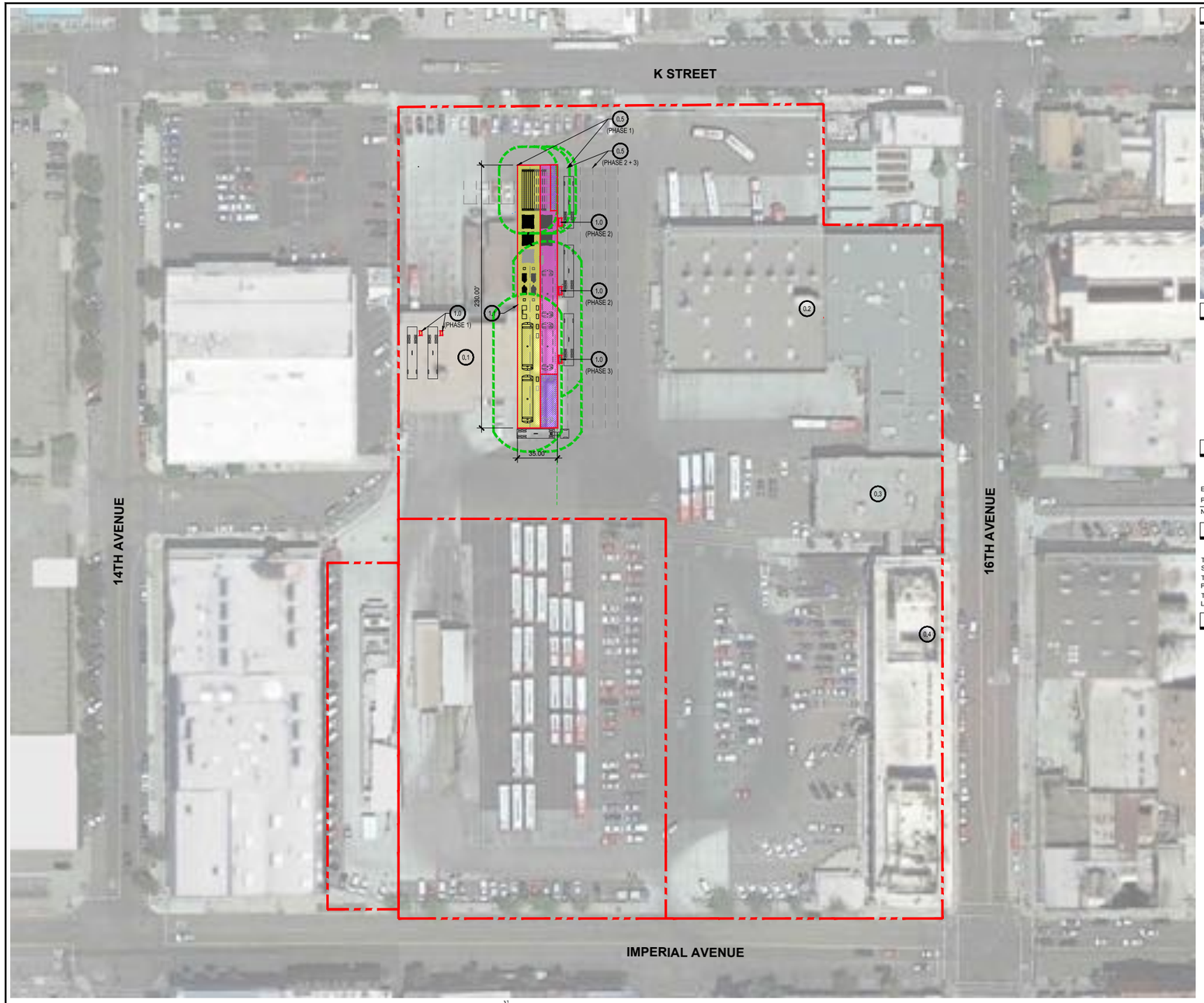

PRELIMINARY HYDROGEN FUELING SITE PLAN

GRAPHIC SCALE: 1" = 40'

VICINITY MAP

SITE NOTES

#	NOTE
	EXISTING ITEMS
0.1	(E) FUEL FACILITY
0.2	(E) MAINTENANCE BUILDING
0.3	(E) ADMIN ANEX
0.4	(E) REPAIR ADMIN BLDG. 1
0.5	(E) BUS PARKING TO BE REMOVED
	NEW ITEMS
1.0	(N) DISPENSER
1.1	(N) HYDROGEN EQUIPMENT COMPOUND

PARKING INFORMATION

	PHASE 1		PHASE 2		PHASE 3	
	CAR	BUS	CAR	BUS	CAR	BUS
EXISTING REMOVED	-2	-20	0	-10	0	0
PROPOSED	0	0	0	0	0	0
NET CHANGE	-2	-20	0	-10	0	0

HYDROGEN EQUIPMENT INFORMATION

	PHASE 1	PHASE 2	PHASE 3
TOTAL COMPOUND SIZE:	20' X 230'	35' X 230'	35' X 230'
TOTAL # OF FUELING POSITION:	2	4	5
TOTAL # OF 15,000-GAL LH2 VESSELS	2	4	5

LEGEND

- PROPOSED PHASE 1 HYDROGEN COMPOUND
- PROPOSED PHASE 2 HYDROGEN COMPOUND
- PROPOSED PHASE 3 HYDROGEN COMPOUND
- PROPOSED PHASE 1 HYDROGEN DISPENSER
- PROPOSED PHASE 2 HYDROGEN DISPENSER
- PROPOSED PHASE 3 HYDROGEN DISPENSER
- PROPOSED VEHICLE PARKING SETBACK LINE
- APPROX. LOCATION OF PROPERTY LINE
- APPROX. LOCATION OF DISPENSING BUS
- APPROX. LOCATION OF OFFLOAD TRUCK

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NO.	DATE	REVISION DESCRIPTION
1	01/10/2020	CLIENT COMMENTS
2	02/18/2020	GENERAL REVISIONS

DEVELOPMENT INFORMATION:

MTS

IMPERIAL AVENUE DIVISION (IAD)

SITE ADDRESS:

100 16TH STREET
@ IMPERIAL AVENUE
SAN DIEGO, CA 92101

DESIGNED BY: PDM	FG PM: PDM
CHECKED BY: PDF	MEP PM: -
DRAWN BY: PDF	CONSULTANT PM: -
DATE: 9/27/2019	PROJECT NO.: 16231

DRAWING TITLE:

PRELIMINARY HYDROGEN FUELING SITE PLAN

SHEET NO.:

SP-1

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PRELIMINARY HYDROGEN FUELING SITE PLAN

GRAPHIC SCALE: 1" = 40'

VICINITY MAP

SITE NOTES

#	NOTE
	EXISTING ITEMS
0.1	MAINTENANCE (BLDG 100)
0.2	BUILDING 200
0.3	BUILDING 300
0.4	DIESEL FUEL (BLDG 400)
0.5	BUILDING 500
0.6	(E) BUS PARKING TO BE REMOVED
	NEW ITEMS
1.0	(N) DISPENSER
1.1	(N) HYDROGEN EQUIPMENT COMPOUND
1.2	(N) FIRE RATED WALL

PARKING INFORMATION

	PHASE 1		PHASE 2		PHASE 3	
	CAR	BUS	CAR	BUS	CAR	BUS
EXISTING REMOVED	0	-5	0	0	0	-1
PROPOSED	0	0	0	0	0	0
NET CHANGE	0	-5	0	0	0	-1

HYDROGEN EQUIPMENT INFORMATION

	PHASE 1	PHASE 2	PHASE 3
TOTAL COMPOUND SIZE:	25' X 121'	25' X 168'	25' X 215'
TOTAL # OF FUELING POSITION:	2	2	2
TOTAL # OF 15,000-GAL LH2 VESSELS	1	2	3

LEGEND

- PROPOSED PHASE 1 HYDROGEN COMPOUND
- PROPOSED PHASE 2 HYDROGEN COMPOUND
- PROPOSED PHASE 3 HYDROGEN COMPOUND
- PROPOSED PHASE 1 HYDROGEN DISPENSER
- PROPOSED PHASE 2 HYDROGEN DISPENSER
- PROPOSED PHASE 3 HYDROGEN DISPENSER
- PROPOSED VEHICLE PARKING SETBACK LINE
- APPROX. LOCATION OF PROPERTY LINE
- APPROX. LOCATION OF DISPENSING BUS
- APPROX. LOCATION OF OFFLOAD TRUCK

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NO.	DATE	REVISION DESCRIPTION
1	02/18/2020	GENERAL REVISIONS

DEVELOPMENT INFORMATION:

MTS
KEARNY MESA DIVISION (KMD)

SITE ADDRESS:

4630 RUFFNER ST
SAN DIEGO, CA 92111

DESIGNED BY: POM	FG PM: POM
CHECKED BY: POM	MEP PM: -
DRAWN BY: POM	CONSULTANT PM: -
DATE: 09/27/2019	PROJECT NO.: 16231

DRAWING TITLE:

PRELIMINARY HYDROGEN FUELING SITE PLAN

SHEET NO.:

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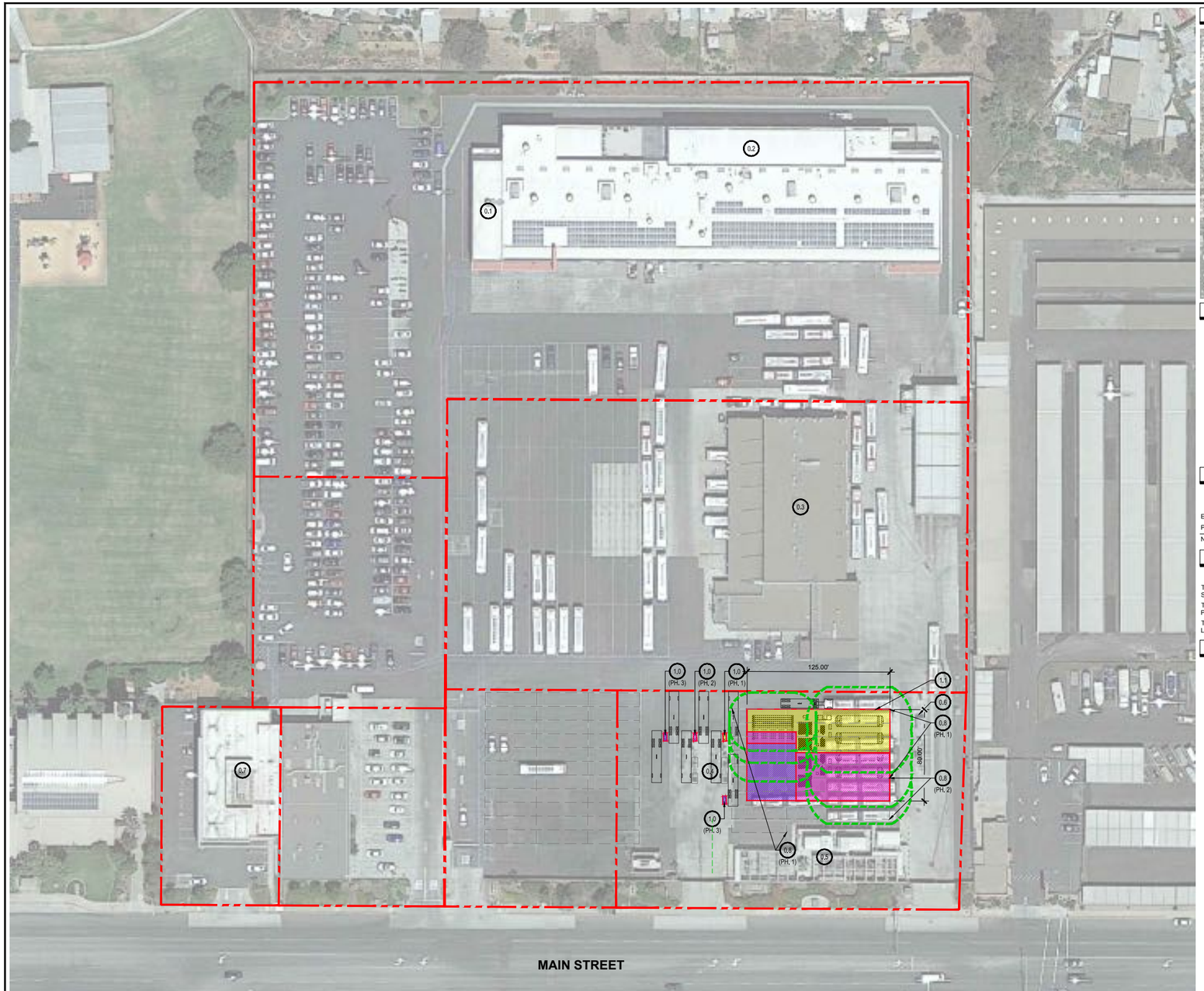

PRELIMINARY HYDROGEN FUELING SITE PLAN

GRAPHIC SCALE: 1" = 40'

VICINITY MAP

SITE NOTES

(#) NOTE

EXISTING ITEMS

0.1 (E) CHASSIS WASH AREA
0.2 (E) MAINTENANCE FACILITY
0.3 (E) MAINTENANCE
0.4 (E) CNG DISPENSERS
0.5 (E) CNG EQUIPMENT COMPOUND
0.6 (E) DIESEL DISPENSER
0.7 (E) ADMINISTRATION BUILDING
0.8 (E) BUS PARKING TO BE REMOVED

NEW ITEMS

1.0 (N) HYDROGEN DISPENSER
1.1 (N) HYDROGEN EQUIPMENT COMPOUND

PARKING INFORMATION

	PHASE 1		PHASE 2		PHASE 3	
	CAR	BUS	CAR	BUS	CAR	BUS
EXISTING REMOVED	0	-19	0	-6	0	0
PROPOSED	0	0	0	0	0	0
NET CHANGE	0	-19	0	-6	0	0

HYDROGEN EQUIPMENT INFORMATION

	PHASE 1	PHASE 2	PHASE 3
TOTAL COMPOUND SIZE:	125' X 38'	125' X 80'	125' X 80'
TOTAL # OF FUELING POSITION:	2	4	7
TOTAL # OF 15,000-GAL LH2 VESSELS	2	4	5

LEGEND

- PROPOSED PHASE 1 HYDROGEN COMPOUND
- PROPOSED PHASE 2 HYDROGEN COMPOUND
- PROPOSED PHASE 3 HYDROGEN COMPOUND
- PROPOSED PHASE 1 HYDROGEN DISPENSER
- PROPOSED PHASE 2 HYDROGEN DISPENSER
- PROPOSED PHASE 3 HYDROGEN DISPENSER
- PROPOSED VEHICLE PARKING SETBACK LINE
- APPROX. LOCATION OF PROPERTY LINE
- APPROX. LOCATION OF DISPENSING BUS
- APPROX. LOCATION OF OFFLOAD TRUCK

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NO.	DATE	REVISION DESCRIPTION
1	01/10/2020	CLIENT COMMENTS
2	02/18/2020	GENERAL REVISIONS
3	04/17/2020	CLIENT COMMENTS

DEVELOPMENT INFORMATION:

MTS
SOUTH BAY BUS MAINTENANCE FACILITY (SBMF)

SITE ADDRESS:

3650A MAIN STREET
CHULA VISTA, CA 91911

DESIGNED BY: POM	FG PM: POM
CHECKED BY: POF	MEP PM: -
DRAWN BY: POF	CONSULTANT PM: -
DATE: 9/27/2019	PROJECT NO.: 16231

DRAWING TITLE:

PRELIMINARY HYDROGEN FUELING SITE PLAN

SHEET NO.:

SP-1

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CALIFORNIA AIR RESOURCES BOARD

Zero-Emission Bus Rollout Plan Guidance for Transit Agencies

The Innovative Clean Transit (ICT) regulation became effective October 1, 2019, and requires all public transit agencies to gradually transition their bus fleets to zero-emission technologies. The ICT regulation applies to all transit agencies that own, operate, or lease buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. It covers standard, articulated, over-the-road, double decker, and cutaway buses. The ICT regulation requires a percentage of new bus purchases to be zero-emission buses (ZEBs). The ZEB percentage increases gradually with time. The ZEB purchase requirements begin in 2023 and 2026 for large[1] and small[2] transit agencies, respectively. Starting in 2029, 100 percent of all transit agencies' new bus purchases must be ZEBs, with a goal of a completed transition to ZEBs (all buses in each transit agency's fleet to be ZEBs) by 2040.

Successful transformation of transit bus fleets to zero-emission technologies will require early planning which includes, route simulations, charging or hydrogen fueling site assessment, and identification and addressing of potential resource gaps, among the many preparatory steps. Transit agencies that have begun the transition to zero-emission technologies stress that early communication and engagement with ZEB manufacturers, technology providers, infrastructure providers, fuel providers, and other related parties are key to a successful and well-coordinated transition.

The ICT regulation requires each transit agency to submit a complete Zero-Emission Bus Rollout Plan (Rollout Plan) before ZEB purchase requirements take effect. A Rollout Plan will serve as a blueprint for full transition to zero-emission technologies. It is intended to help transit agencies work through many of the potential challenges and explore solutions.

The State anticipates learning from transit agencies' Rollout Plans, and applying what it learns to provide support for the most needed aspects as transit agencies implement their plans. Transit agencies' Rollout Plans will provide information on the strategies

[1] The ICT regulation defines a "Large Transit Agency" (13 CCR § 2023(b)(30)) as a transit agency that meets one of the following criteria:

1. It operates either in the South Coast or the San Joaquin Valley Air Basin and operates more than 65 buses in annual maximum service; or
2. It operates outside of these areas, but in an urbanized area with a population of at least 200,000 as last published by the Bureau of Census before December 31, 2017, and has at least 100 buses in annual maximum service.

[2] The ICT regulation defines a "Small Transit Agency" (13 CCR § 2023(b)(49)) as all other transit agencies that do not meet the definition of the "Large Transit Agency".

each transit agency has determined to be the best for their own unique situations. The components of a Rollout Plan will provide the State with crucial information, such as the probable number of buses to be deployed by each transit agency, which will inform future policy and funding decisions, and other ways State agencies can support transit agencies through this transition. The Rollout Plans will also help fuel providers learn about transit agencies' infrastructure needs during different stages of transition, and help inform decisions regarding what support would best help transit agencies as they develop and expand the needed charging infrastructure. Information provided in the Rollout Plans is necessary to address barriers to implementation.

Each Rollout Plan must include all of the required components to be considered complete, and must be approved by the transit agency's governing body through the adoption of a resolution, prior to submitting it to California Air Resources Board (CARB). A large transit agency must submit its approved Rollout Plan by July 1, 2020, and a small transit agency must submit these documents by July 1, 2023 (13 CCR § 2023.1(d)(2)). The ICT regulation allows two or more transit agencies to pool their resources and form a Joint Zero-Emission Bus Group (Joint Group)[3] to collectively comply with the ZEB purchase requirements. Members of an approved Joint Group may submit one Rollout Plan that is approved by each participating transit agency's governing board, in lieu of submitting individual Rollout Plans.

The purpose of this document is to serve as guidance to support transit agencies with preparation of their Rollout Plans. It summarizes the information required in a Rollout Plan to meet the requirements of the ICT regulation. In addition to mandatory requirements, this document includes a request for supplementary details that are intended to help transit agencies create a more thorough plan for meeting their future needs. These supplementary details will also improve the State's understanding of transit agencies' operations and plans so the State can provide more targeted support. **Response to these supplementary details is highly recommended, but not mandatory.** The fields required by the regulation are identified by citing the specific code sections or including the word "required," whereas the supplementary fields are identified by the word "optional." This guidance contains nine (9) sections:

[3] A Joint Group must meet at least one of the following eligibility criteria (13 CCR § 2023.2(a)): All members of a Joint group must be located within the same service area of a Metropolitan Planning Organization (MPO) or Regional Transportation Planning Organization; or be located within the same air basin, Air Quality Management District, Air Pollution Control District, or Air Resources District; or share infrastructure.

Section A: Transit Agency Information
Section B: Rollout Plan General Information
Section C: Technology Portfolio
Section D: Current Bus Fleet Composition and Future Bus Purchases
Section E: Facilities and Infrastructure Modifications
Section F: Providing Service in Disadvantaged Communities
Section G: Workforce Training
Section H: Potential Funding Sources
Section I: Start-up and Scale-up Challenges

This guidance document does not replace the adopted regulatory text, which takes precedence in all instances. **The purpose of this document is to provide guidance on the content of the Rollout Plan, but transit agencies are not required to follow the exact format of this guidance document.**

The ICT regulation and other regulatory documents are available at the Innovative Clean Transit website (https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit.) For questions, please contact: Yachun Chow at yachun.chow@arb.ca.gov or (916) 322-7450, or Shirin Barfjani at shirin.barfjani@arb.ca.gov or (916) 445-6017.

Section A: Transit Agency Information

Please provide the following information regarding your transit agencies:

1. Transit agency's name (required)
2. Mailing address (number, street, city, county, Zip Code) (optional)
3. Name of transit agency's air district(s) (optional)
4. Name of transit agency's air basin(s) (optional)
5. Total number of buses in Annual Maximum Service[4] (optional)
6. Population of the urbanized area a transit agency is serving as last published by the Census Bureau before December 31, 2017. (optional)
7. Contact information of the general manager, chief operating officer, or equivalent (optional)
    a. Contact name (last name, first name, MI)
    b. Title
    c. Phone number
    d. Email address
8. Is your transit agency part of a Joint Group[5] (13 CCR § 2023.1(d)(3))? (Yes/No) (required)
    a. If yes, please provide the following information:
        i. Is your transit agency submitting a separate Rollout Plan specific to your agency, or will one Rollout Plan be submitted for all participating members of the Joint Group (13 CCR § 2023.1(d)(3))? (required)

[4] The ICT regulation defines "Annual Maximum Service" (13 CCR § 2023(b)(3)) as the number of buses in revenue service that are operated during the peak season of the year, on the week and day that maximum service is provided, but excludes demand response buses. Annual maximum service excludes an atypical service day, on which a transit agency provides extra service to meet the demands for special events such as conventions, parades, or public celebrations, or operates significantly reduced service because of unusually bad weather (e.g. snowstorms) or major public disruptions (e.g. earthquakes or terrorism); or one-time special events.

[5] The ICT regulation defines a Joint Zero-Emission Bus Group or Joint Group (13 CCR § 2023.2) as two or more transit agencies that choose to form a group to comply collectively with the zero-emission bus requirements of section 2023.1 of the ICT regulation.

ii. Please provide a complete list of the transit agencies that are members of the Joint Group. (optional)
iii. Please provide contact information for the general manager, chief operating officer, or equivalent staff member of each participating transit agency member. (full name, title, affiliation, phone number, and email address) (optional)

Section B: Rollout Plan General Information

1. Does your transit agency's Rollout Plan have a goal of full transition to zero-emission technologies by 2040 that avoids early retirement of conventional transit buses (13 CCR § 2023.1(d)(1)(A))? (Yes/No) (required)
2. The ICT regulation requires 100% ZEB purchase in 2029. Conventional transit buses that are purchased in 2028 could be delivered in or after 2029. Please explain how your transit agency plans to avoid potential early retirement of conventional buses in order to meet the 2040 goal. (optional)
3. When did your transit agency's board or governing body approve the Rollout Plan?
    a. Rollout Plan's approval date (MM/DD/YYYY) (optional)
    b. Resolution number (optional)
    c. Is a copy of the board approved resolution attached to the Rollout Plan submitted to CARB (13 CCR § 2023.1(d)(2))? (Yes/No) (required)
4. Please provide contact information for CARB to follow up on details of the Rollout Plan, if needed. (optional)
    a. Contact name (first and last name)
    b. Title
    c. Phone number
    d. Email
5. Who has created the Rollout Plan? (My transit agency / A consultant) (optional)
    a. If it was created by a consultant, please identify the consulting company's name.
6. What was the cost for the creation of the Rollout Plan? (optional)
7. How many person-hours did it take to create the Rollout Plan? (optional)

Section C: Technology Portfolio

1. What type(s) of zero-emission bus technologies (e.g. battery electric and fuel cell electric buses) does your transit agency plan to deploy through 2040? (13 CCR § 2023.1(d)(1)(B)) (required)

Section D: Current Bus Fleet Composition and Future Bus Purchases

1. Please complete Table 1 with information on each individual bus in your current bus fleet. Please identify the fuel type of each individual conventional bus as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline. For zero-emission technologies, identify the fuel type as hydrogen or electricity and indicate which charging technology (depot, wireless, and/or on-route) will be used. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For ease of use, you can group the bus information based on a parameter that makes the most sense for your transit agency. For example, California-Heritage Transit has 12 standard diesel buses that are 2017 bus model year with 2016 model year engines. In addition, this transit agency has 3 articulated diesel buses that are 2011 bus model year with 2010 model year engine. (optional)

Table 1: Individual Bus Information of Current Bus Fleet (Optional)

Number of Buses	Engine Model Year	Bus Model Year	Fuel Type	Bus Type

2. Please complete Table 2 regarding expected future bus purchases,[6] including the number of buses in total expected to be purchased or leased in the year of purchase. Identify the number and percentage of zero-emission buses of the total bus

[6] The ICT regulation defines a "bus purchase" (13 CCR § 2023(b)(7)) as occurring when a transit agency executes one of the following after it has identified, committed, and encumbered funds:
1. A written Notice to Proceed to a bus manufacturer to begin production of a bus either under a previously-entered purchase contract; or to execute a contract option;
2. If no Notice to Proceed is issued, a written purchase agreement between a transit agency and a bus manufacturer that specifies the date when the bus manufacturer is to proceed with the work to manufacture the bus; or

purchases each year, as well as bus types and fuel types. Identify the same type of information for purchases of conventional buses. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For zero-emission technologies, please identify the fuel type as hydrogen or electricity and the type of charging technology (depot, wireless, and/or on-route). For conventional technologies, identify the fuel type as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline.
(13 CCR § 2023.1(d)(1)(D)) (required)

Table 2: Future Bus Purchases (Required)

Timeline (Year)	Total Number of Buses to Purchase	Number of ZEB Purchases	Percentage of Annual ZEB Purchases	ZEB Bus Type(s)	ZEB Fuel Type(s)	Number of Conv. Bus Purchases	Percentage of Annual Conv. Bus Purchases	Type(s) of Conv. Buses	Fuel Type(s) of Conv. Buses

3. A signed written lease agreement between a transit agency and a bus manufacturer or sales representative for a new bus to be placed in revenue service for a contract term of five years or more.

3. Following the same bus purchase timeline as identified in Table 2, please identify in Table 3 the required operational range your future zero-emission buses should have to be able to serve in your fleet. Please provide the estimated cost of each bus with that required operational range. (Optional)

Table 3: Range and Estimated Costs of Future ZEB Purchases (Optional)

Timeline (Year) (Same as in Table 2)	**Number of ZEBs**	**Bus Type(s)**	**Required BEB[7] Range/ On-Board H_2 Storage**	**Estimated Cost of Each Bus**

4. Is your transit agency considering converting some of the conventional buses in service to zero-emission buses (13 CCR § 2023.1(d)(1)(E))? (Yes/No) (required)
   a. If yes, please complete Table 4a with your transit agency's schedule to convert the conventional buses to zero-emission technologies. (13 CCR § 2023.1(d)(1)(E)) (required)
   b. Please identify the estimated cost of converting each bus, the required battery capacity or on-board hydrogen storage, and the estimated range in Table 4b. (optional)

Table 4a: Schedule of Converting Conventional Buses to Zero-Emission Buses (required)

Timeline (Year)	**Number of Buses**	**Bus Type(s)**

[7] Battery electric bus

Table 4b: Range and Estimated Costs for Converting Conventional Buses to Zero-Emission Buses (optional)

Estimated Cost per Bus	Battery Capacity/ H_2 Storage	Range

Section E: Facilities and Infrastructure Modifications

1. Please complete Table 5 with names, locations, and main functions of transit agency divisions or facilities that would be involved in deploying and maintaining zero-emission buses. Please limit the facilities to bus yards and facilities with maintenance, fueling, and charging functions, and exclude other operational functions like training centers, information and trip planning offices, and administrative buildings. Please identify which facility(ies) require construction, infrastructure modifications, or upgrades to support your transit agency's long-term transition to zero-emission technologies and the estimated timeline for such an upgrade. Please also specify the type(s) of infrastructure planned in each division or facility and provide their service capacities (e.g. on-route high-power charging system to deploy 20 BEB in 2025). (13 CCR § 2023.1(d)(1)(C)). (required)

Table 5: Facilities Information and Construction Timeline (Required)

Division/ Facility Name	Address	Main Function(s)	Type(s) of Infrastructure	Service Capacity	Needs Upgrade? (Yes/No)	Estimated Construction Timeline

2. Regarding the information provided in Table 5, please explain the types of necessary upgrades or infrastructure modifications each facility or division needs to support your transit agency's long-term transition to ZEB. Please also provide the specification of each infrastructure in the related facility or division before and after the upgrades or modifications. For example, Division Blue-

Sky has a parking capacity of 150 buses in 2020. In 2025, after parking rearrangement and installation of 30 depot fast chargers with power of 150 kW, this facility is expected to accommodate 120 buses; or Division Enchanting Waterfalls will deploy 20 fuel cell electric buses (FCEBs) in 2025 with trucked-in liquid hydrogen for 1,500 kg of storage capacity and will expand to 120 FCEBs in 2035 with trucked-in liquid hydrogen for 9,000 kg of storage capacity; or Division Evergreen will deploy 20 BEBs in 2025 using an on-route high-power charging system (500 kW) with 10 chargers and will expand to 200 BEBs in 2040 using the same charging method with 15 MW of on-site power. (Optional)

3. Do you expect to make any modifications to your bus parking arrangements? Explain the modifications and why they are needed. (Optional)
4. Do you expect to need additional parking spaces for completing the transition to zero-emission technologies? Explain why.(Optional)
5. In Table 6, please identify the propulsion system (e.g. diesel, CNG, battery electric, fuel cell) of all buses that will be dispatched from the facilities identified in Table 5. Are any of these facilities located in NOx-exempt areas?[8] (optional)

Table 6: NOx-Exempt Area and Electric Utilities' Territories (Optional)

Division's Name (Same as in Table 5)	**Type(s) of Bus Propulsion System**	**Located in NOx-Exempt Area? (Yes/No)**	**Name(s) of Electric Utility in Your Service Area**

6. Please identify the electric utilities in your transit agency's service area. (Optional)

[8] The ICT regulation defines "NOx Exempt Areas" (13 CCR § 2023(b)(39)) as the following counties and air basins: Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Eastern Kern (the portion of Kern County within the Eastern Kern Air Pollution Control District), Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Monterey, Nevada, Northern Sonoma (as defined in title 17, California Code of Regulations, section 60100(e)), Plumas, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Shasta, Sierra, Siskiyou, Northern Sutter (the portion of Sutter County that is north of the line that extends from the south east corner of Colusa County to the southwest corner of Yuba County), the portion of El Dorado County that is within the Lake Tahoe Air Basin (as defined in title 17, California Code of Regulations, section 60113), the portion of Placer County that is East of Highway 89 or within the Lake Tahoe Air Basin, Trinity, Tehama, Tuolumne, and Yuba.

Section F: Providing Service in Disadvantaged Communities

1. Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen?[9] Yes/ No (required)
   a. If yes, please describe how your transit agency is planning to deploy zero-emission buses in disadvantaged communities (13 CCR § 2023.1(d)(1)(F)). (required)
   b. Please complete Table 7 with the estimated number of zero-emission buses your transit agency is planning to deploy in disadvantaged communities and the estimated timeline.

Table 7: Service in Disadvantaged Communities (Optional)

Timeline (Year)	Number of ZEBs	Location of Disadvantaged Community

[9] The ICT regulation defines the "CalEnviroScreen" (13 CCR § 2023(b)(10)) as a mapping tool that is developed by the Office of Environmental Health Hazard Assessment (OEHHA) at the request of the California Environmental Protection Agency (CalEPA) to identify California's most pollution-burdened and vulnerable communities based on geographic, socioeconomic, public health, and environmental hazard criteria. The CalEnviroScreen is available for public use at https://oehha.ca.gov/calenviroscreen.

Section G: Workforce Training

1. Please describe your transit agency's plan and schedule for the training of bus operators and maintenance and repair staff on zero-emission bus technologies (13 CCR § 2023.1(d)(1)(G)). (required)
2. Please complete Table 8. (optional)

Table 8: Workforce Training Schedule (Optional)

Timeline (Year)	Training Program/ Class	Purpose of Training	Name of Provider	Number of Trainees	Trainees' Positions[10]	Training Hours	Training Frequency	Estimated Costs Per Class

[10] Example: bus operators, maintenance and repair technicians, etc.

Section H: Potential Funding Sources

1. Please identify all potential funding sources your transit agency expects to use to acquire zero-emission technologies (both vehicles and infrastructure) (13 CCR § 2023.1(d)(1)(H)). (required)

2. In Table 9, please describe how the identified potential funding sources could support your transit agency to execute the Rollout Plan as currently designed by describing how each fund is planned to be used over time (e.g. to purchase a zero-emission bus, maintain a zero-emission bus, upgrade the charging/fueling infrastructure, construct or upgrade a maintenance facility). Please also identify how many zero-emission buses and/or which type(s) of infrastructure might be purchased, installed, or maintained with each funding source. (optional)

Table 9: Potential Funding Sources (Optional)

Timeline (Year)	Name of Funding Source	How Each Fund is Planned to be Used	Estimated Amount(s) of Each Funding Source ($)	Number of ZEBs to Purchase or Maintain, or Type(s) of Infrastructure to Install or Upgrade

Section I: Start-up and Scale-up Challenges

1. Please describe any major challenges your transit agency is currently facing in small scale zero-emission bus deployment. (Optional).
    a. How might CARB assist you to overcome these challenges? Please share your recommendations. (Optional)

2. Please describe any challenges your transit agency may face in scaling up zero-emission bus deployment. (Optional)
    a. How might CARB assist you to overcome these challenges? Please share your recommendations. (Optional)

Section F: Providing Service in Disadvantaged Communities

1. **Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen? Yes/ No (required)** **Yes, per the June 2018 update to CalEnviroScreen, all of the SB 535 Disadvantaged Communities Census tracts (DACs) in San Diego County are located within the MTS service area. MTS provides either zero-emission all-electric light rail transit service, bus transit service, or both to every DAC within our service area. As a result, every San Diego County DAC will benefit from MTS's deployment of zero-emission buses. Potential risks to this model include vehicle blocking, which may preclude early-technology, lower-range zero-emission buses from being assigned to higher-mileage vehicle blocks, as well as delays in EVSE and/or hydrogen fueling infrastructure development at each operating division, which would result in delayed deployment at operating divisions serving different regions of the MTS service area. MTS plans to include provisions to address these situations in future updates to its Vehicle Assignment Policy.**

If yes, please describe how your transit agency is planning to deploy zero-emission buses in disadvantaged communities (13 CCR § 2023.1(d)(1)(F)). (required) **MTS maintains a Vehicle Assignment Policy that guides deployment of revenue vehicles throughout our service area. Per the iteration of the policy currently in effect, the only differentiating factor between buses assigned to standard, non-Rapid revenue service routes is vehicle age, with all other passenger-facing amenities kept consistent. New buses are procured approximately annually in order to maintain consistent capital budgets, and each operating division receives new buses and retires old buses on a consistent schedule. In addition, buses are assigned to each route on a rotating basis to ensure equity. With the introduction of zero-emission buses, MTS plans to follow prior practice as closely as possible, with new zero-emission buses deployed equally on all routes to the greatest extent practicable, including on routes serving DACs. This will ensure that DACs will benefit from reduced local emissions from transit use at an equal rate as MTS is able to procure buses.**

Please complete Table 7 with the estimated number of zero-emission buses your transit agency is planning to deploy in disadvantaged communities and the estimated timeline.

Table 1: Service in Disadvantaged Communities (DAC) (optional)

Based on CalEnviroScreen SB 535 Disadvantaged Communities Census tracts (DACs)

Timeline (Year)	Number of ZEBs	Location of DAC (Census Tracts)
2020	2	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2021	0	
2022	12	6073013205, 6073010009
2023	11	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000

2024	10	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2025	13	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2026	58	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000

2027	44	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2028	34	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2029	68	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000

2030	115	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2031	69	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2032	103	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000

2033	37	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2034	76	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
2035	66	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000

2036	117	6073002501, 6073002502, 6073003301, 6073003303, 6073003305, 6073003403, 6073003404, 6073003501, 6073003502, 6073003601, 6073003602, 6073003603, 6073003800, 6073003901, 6073003902, 6073004000, 6073004100, 6073004700, 6073004800, 6073004900, 6073005000, 6073005100, 6073005200, 6073005300, 6073005700, 6073010009, 6073011601, 6073011602, 6073011700, 6073011801, 6073012501, 6073012502, 6073012600, 6073013205, 6073015901, 6073016202, 6073021900, 6073022000
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Zero Emission Bus (ZEB) Pilot Project Update

Executive Committee
June 11, 2020

Regulatory Update

- Innovative Clean Transit Rule (ICT)
  - Rule passed 12/14/2018 by California Air Resources Board (CARB)
  - Rollout plan due to CARB June 30, 2020
  - Convert fleet to Zero Emission Vehicles by 2040 (Governor's goal)
  - 60 foot, 45 foot & Minibuses exempt until 2026

    ** Market evaluation by CARB prior to the requirement*

Innovative Clean Transit Rule (2018):

ZEB Purchase Mandate: The regulation requires transit agencies to acquire a minimum number of ZEBs at the time of new bus purchases, based on the following schedules:

Large Transit Agencies

2023 – 25 percent

2026 – 50 percent

2029 and after – 100 percent

MTS Pilot Project Update

- ZEB Pilot Program Initiated: October 2017
- Center for Transportation and the Environment (CTE) Consulting Services contract attained: March 2018
- Eight (8) Battery Electric Buses Purchased:
  - Six (6) New Flyer: May 2018
  - Two (2) Gillig: September 2019
- Twelve Chargers Purchased:
  - Six (6): May 2018
  - Six (6): June 2019

Pilot Charging Infrastructure

- Installation of six (6) chargers at the Imperial Avenue Division to support pilot project
  - Construction and commission completed: July 2019
- Installation of two (2) chargers each: Kearny Mesa Division, South Bay and East County
  - Construction and commission expected completion: August 2020
- Twelve (12) total electric chargers (Supports up to 24 buses)

Battery Electric Bus (BEB) Pilot Performance

New Flyer

- Received six (6) 40 ft. extended range BEB's
- In-service December 2019
- Energy Storage System = 466 kWh
  - Max range to date = 148 miles
- In-service performance
  - Cost per mile = $0.94 per mile
  - Availability = 82%
  - Reliability = 99%
  - Fuel Efficiency = 2.5kWh/mile
  - Positive Feedback
- Acceptance delays

Gillig

- Procured two (2) 40 ft. extended range BEB's
- Delivery expected in *December 2020
- Energy Storage System = 444 kWh

****Due to COVID, delivery time on Gillig BEB's will be delayed***

ZEB Pilot Project Cost

Total Cost to Date: Phase I & Phase II: $10,382,983

- Consultant & Project Management = $797,957
- Buses: ($7,398,996)
  - Six (6) New Flyer battery electric buses = $5,367,448 ($894,575 per bus)
  - Tools & Personal Protective Equipment = $21,000 *(New Flyer buses only)*
  - Two (2) Gillig battery electric buses = $2,010,548 ($1,005,274 per bus)
- Pilot Project Charging Infrastructure: ($2,098,068)
  - Twelve (12) depot chargers = $717,572
  - Design = $360,496
  - Construction = $1.02M
  - Average cost per charger = $174,839
- Training = $87,962 *(New Flyer buses only)*
- Total pilot budget: $12,400,000

ZEB Program Funding

Awarded:

- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for six (6) New Flyer Buses & six (6) chargers at IAD
  - Buses - $990,000 (incremental cost coverage per bus = 37%)
  - Chargers - $180,000 (covers approximately 50% of the per charger cost)
- Transit Intercity Rail Capital Program (TIRCP) for Iris Rapid Project = $22 million
- Low Carbon Transit Operations Program (LCTOP) for ZEB Pilot Program = $9 million

Applied:

- Volkswagen Mitigation Trust

Applied and Not Awarded:

- Low or No Emission Vehicle Program (Low/No) 2020
- Low/No – 2018 & 2019

Future Applications:

- Medium/Heavy Duty Infrastructure for Transit Fleets (California Energy Commission Grant)

Iris Rapid (South Bay) – Early Transition

- Twelve (12) sixty-foot battery electric bus purchase
  - CA State Bid ($1,377,559 per bus) tax excluded
  - TIRCP funded (primary)

- Charger infrastructure
  - Design: Long-term design (Scalable)
    - Charger facility master planning: March 2020
    - Operating plan finalized: April 2020
    - Charger design: October 2020 – March 2021
    - Charger construction September 2021 – March 2022

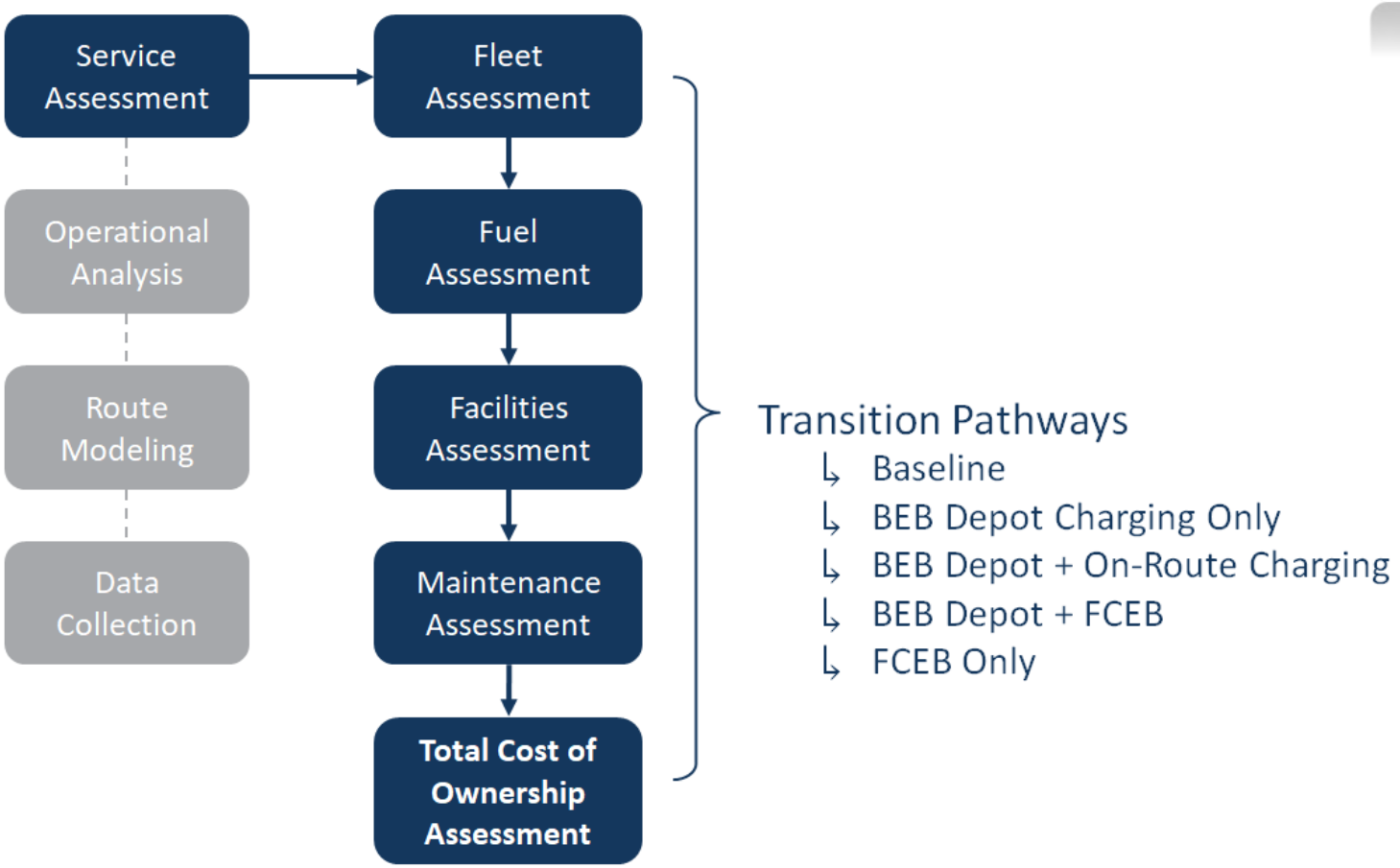
- SDG&E feasibility site assessment for power need

Introduction

- MTS' Goals
  - Zero-emission fleet by 2040
  - Comply with CARB's Innovative Clean Transit Regulation
  - Develop Transition Plan

- ZEB Study Objectives
  - Assess Fleet, Fuel, Maintenance and Infrastructure projected requirements and related costs
  - Assess Total Cost of Ownership

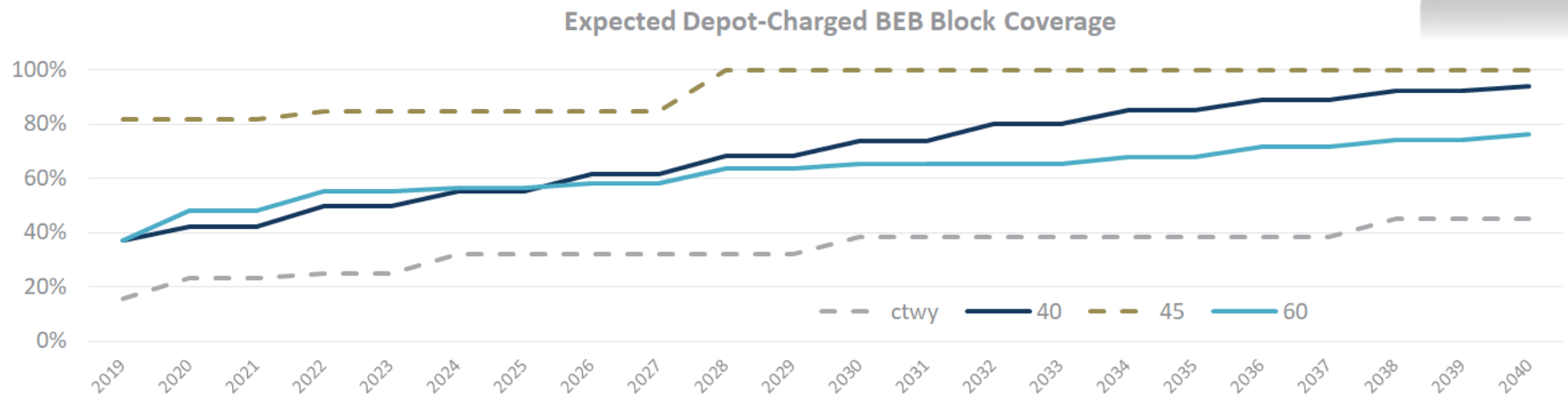
ZEB Transition Methodology



ZEB Technology Uncertainties

- Rapidly developing technologies
  - Bus: energy storage, vehicle efficiencies
- Timeline for improvements in Energy Density
  - Some MTS blocks are currently too long for one-to-one replacement (Blocks % unattainable)
  - Weight issue: trade-off between range and passengers
- Electricity/Hydrogen cost more than CNG to operate
  - Increasing renewables on the grid can change time-of-use demand
  - Despite short-term utility programs, long-term rate outlook is unknown
- Battery degradation impact on range
  - Beginning-of-Life vs. End-of-Life batteries
- Infrastructure Footprint
- Redundancy/Resiliency

Operational Analysis



Expected BEB Block Coverage

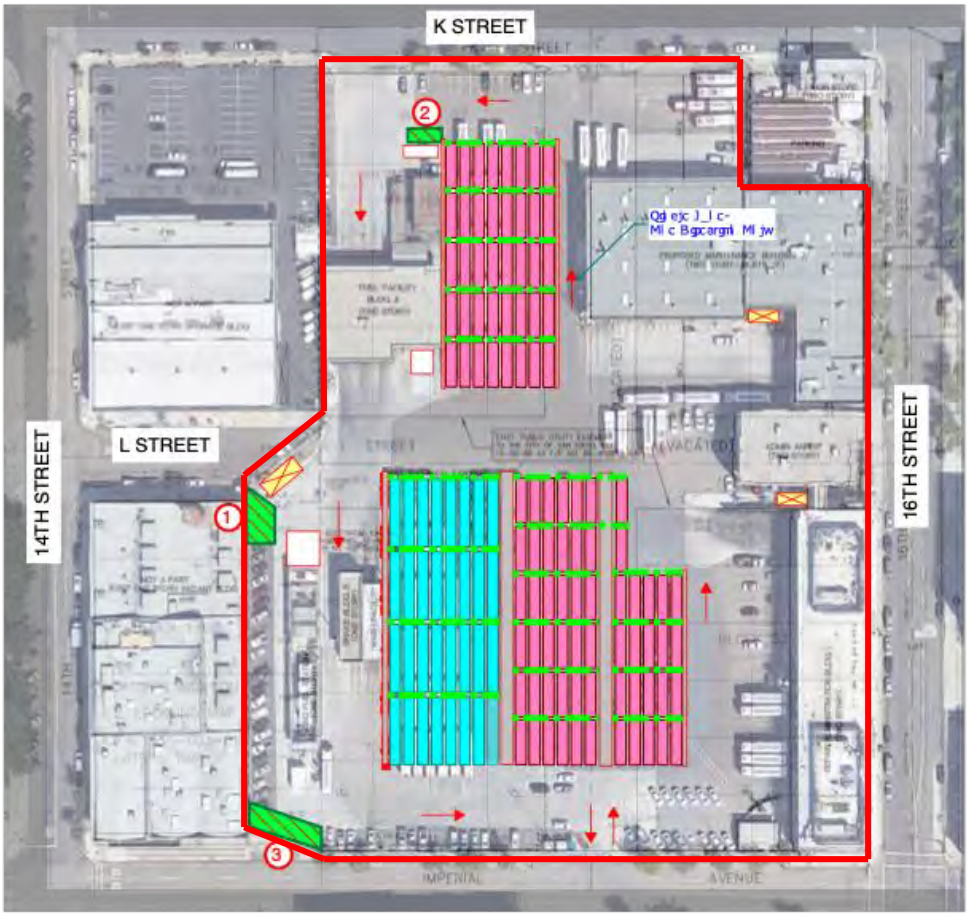
	2020	2030	2040
Minibus	23%	39%	45%
40'	42%	74%	94%
45'	82%	100%	100%
60'	48%	65%	76%

- At the time analysis completed, Minibus and 45' BEBs not Altoona tested
- Minibus service (on demand) creates significant challenges for BEB operations

BEB Infrastructure

- Gantry structures at each division, except Copley
- Plug-in or overhead pantograph dispensers
- Super Off-Peak or Off-Peak, overnight charging
- One (1) bus per dispenser, Two (2) dispensers per charger
- Charge management system
- Redundancy

Imperial Ave BEB Layout



Imperial Ave		
Bus Length (ft)	**All Buses**	**BEBs in 2040**
22	0	0
29	0	0
32	0	0
40	111	98
45	0	0
60	44	31
Totals	**155**	**129**

LEGEND

- EXISTING TRANSFORMER
- PROPERTY LINE
- ① NEW TRANSFORMER OPPORTUNITY (WITH RECOMMENDED PRIORITY)
- ALTERNATE CHARGER OPPORTUNITY
- 6' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- 12' WIDE GANTRY SUPPORT STRUCTURE & CHARGER AREA
- POTENTIAL CHARGER GANTRY LOCATION (9 GANTRIES/8 BUS SPAN, 4 GANTRIES/6 BUS SPAN, 2 GANTRIES/6 BUS SPAN w/ 1 STALL CANTILEVER, 4 GANTRIES/5 BUS SPAN, 130 CHARGING STALLS)
- 40' BUS PARKING (98 SPACES/98 REQUIRED)
- 60' BUS PARKING (32 SPACES/31 REQUIRED)
- DIRECTION OF TRAFFIC

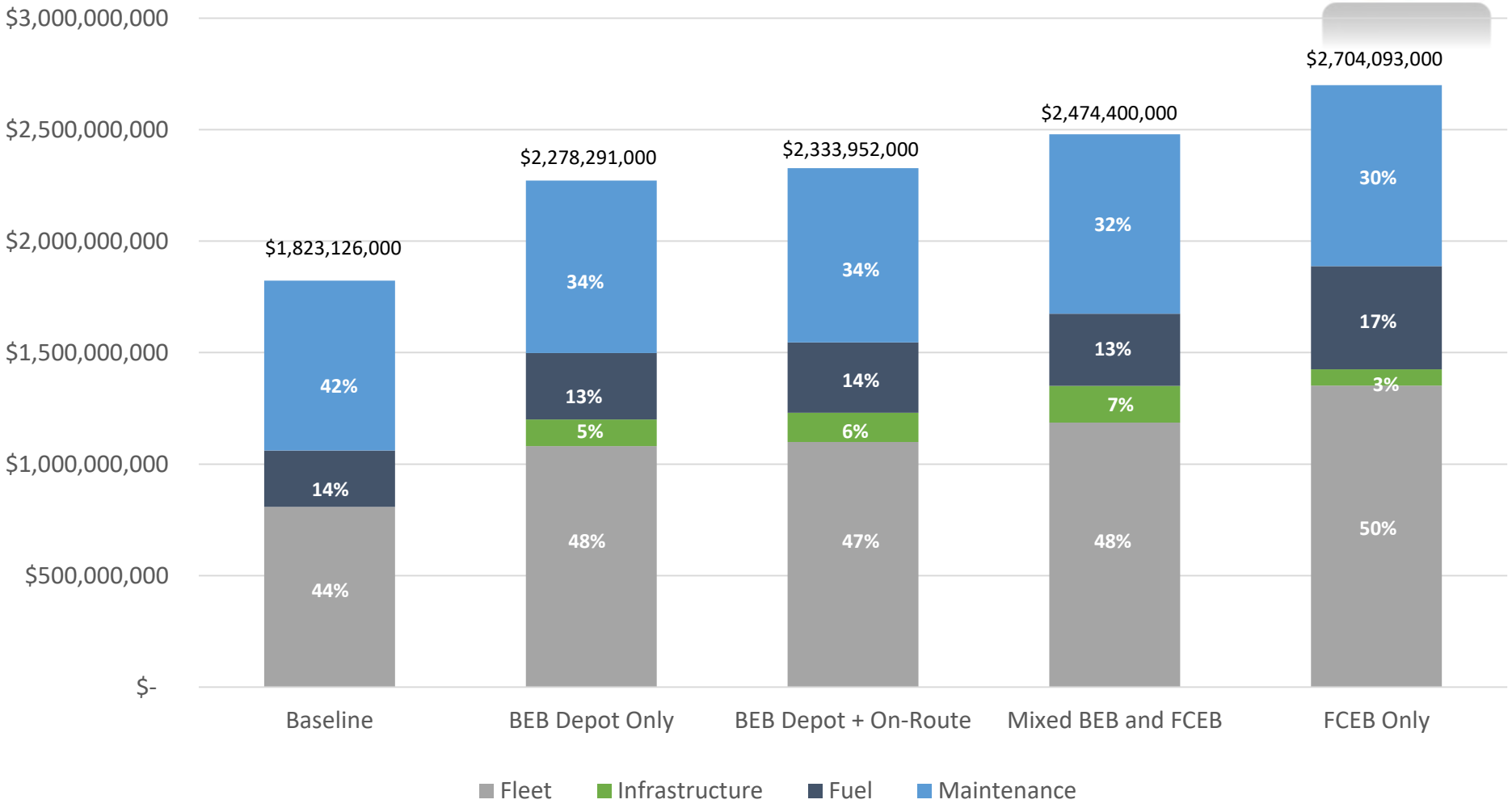
Total Transition Costs - 2040

	Baseline	S1: BEB Depot Only	S2: BEB Depot + On-Route	S3: Mixed BEB and FCEB	S4: FCEB Only
Fleet	$ 808,294,000	$ 1,086,465,000	$ 1,105,467,000	$ 1,181,414,000	$ 1,355,484,000
Fuel	$ 252,569,000	$ 298,234,000	$ 314,657,000	$ 323,380,000	$ 462,731,000
Infrastructure	$ -	$ 120,305,000	$ 131,489,000	$ 164,915,000	$ 73,394,000
Maintenance	$ 762,263,000	$ 773,287,000	$ 782,339,000	$ 804,691,000	$ 812,484,000
Total	**$ 1,823,126,000**	**$ 2,278,291,000**	**$ 2,333,952,000**	**$ 2,474,400,000**	**$ 2,704,093,000**
Incremental over Baseline		$ 455,165,000	$ 510,826,000	$ 651,274,000	$ 880,967,000
ZEB % in 2040	**2%**	**77%**	**84%**	**95%**	**95%**

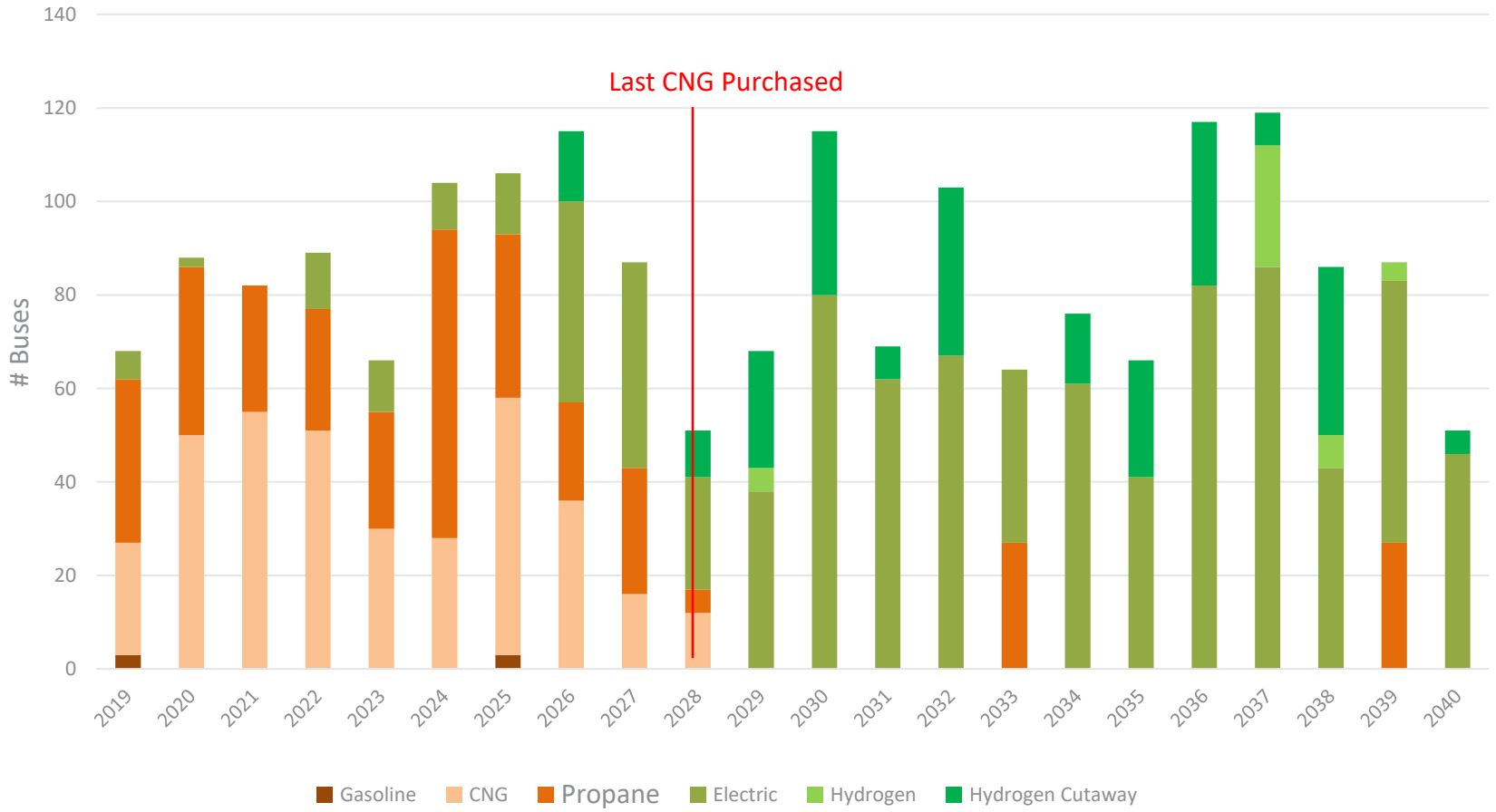
Notes:

- *2020 costs analysis*
- *Includes minibuses in all scenarios*
- *If minibuses are removed, then BEB Depot Only scenario percentage becomes **89%** by 2040*
- *Infrastructure costs do not include redundancy, battery storage, and/or a new facility*

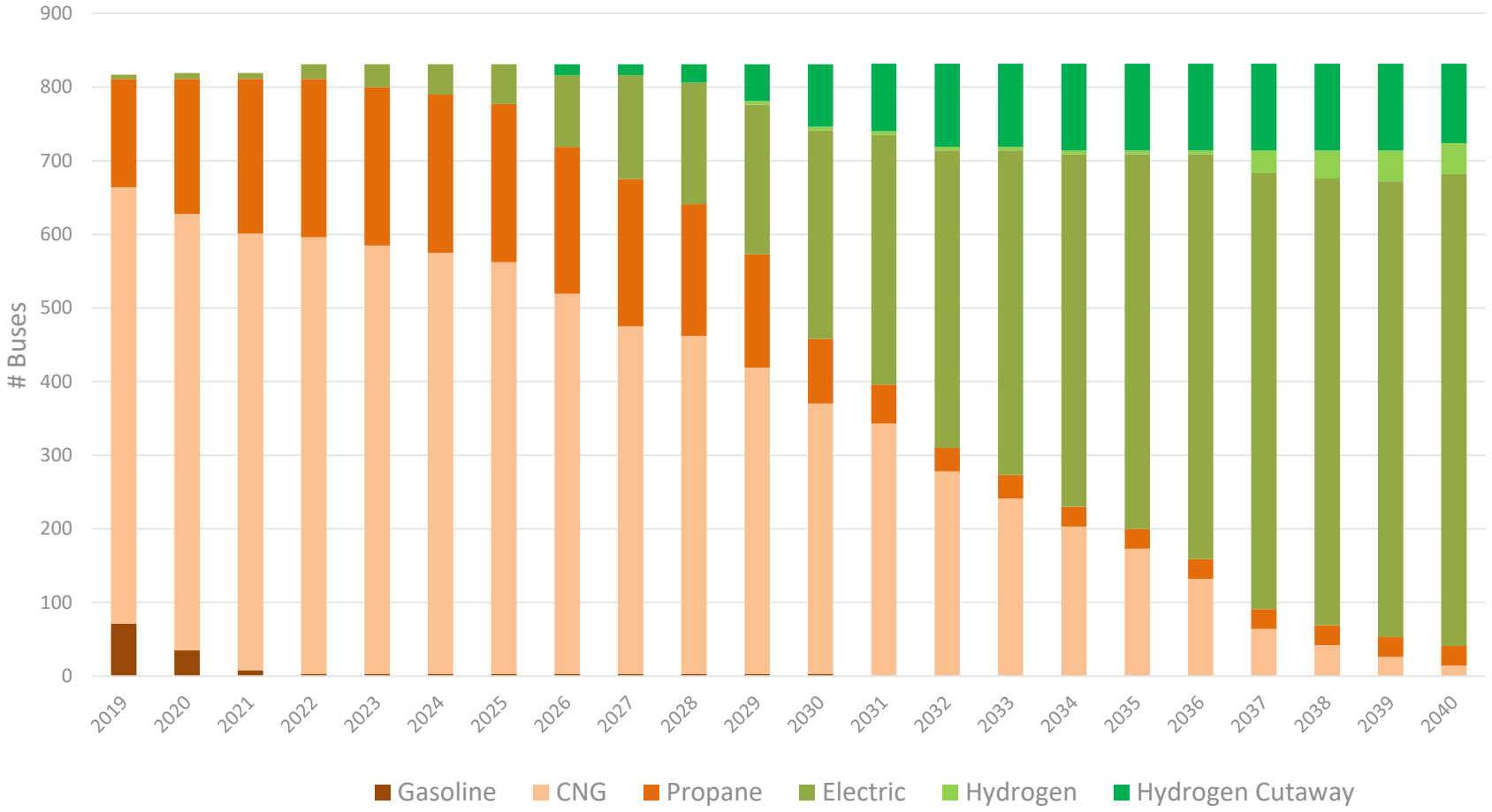
Total Transition Costs: 2020 – 2040



Annual Vehicle Purchases



Fleet Composition through Transition



Challenges

- Infrastructure
- Constrained footprint
- New site (estimate $185M)
- Grid capacity
- Charge/Fuel Management
- Redundancy
- Range limitations
- Funding

Industry Transition Updates

LA Metro - 2200 bus fleet:

- In 2016, committed to 100% ZEB by 2030
- In 2019, amended procurement plans to include CNG buses to bridge the gap
- Over 600 CNG buses have been authorized

Foothill Transit - 376 bus fleet:

- In 2016, committed to 100% ZEB by 2030
- Originally implemented BEB's with overhead (In-route) charging
- In 2020, original plans amended to reflect purchase and placement of depot charging
- Currently evaluating hydrogen fuel cell buses for transition

Antelope Valley Transit Authority - 88 bus fleet:

- In 2016, committed to 100% ZEB by 2018
- To date, roughly 50% are ZEB's – remainder fleet Diesel/ Diesel Hybrid
- Operating yard is approximately 16 acres

North County Transit District - 152 bus fleet:

- Consultant on board to help develop transition plan
- Currently no ZEB's on order
- Early data indicates a mix fleet approach with BEB first

Next Steps

- ZEB Pilot Ongoing (8 buses)
- Working with SDG&E
  - SB 350 Program
- Early fleet transition (Iris Rapid – 12 sixty-foot buses)
- South Bay facility charging design & construction
- Secure additional funding for ZEB transition costs
- Submit CARB Rollout Plan
  - June 30, 2020 or request an extension
- Assessment of fuel cell options
- COVID impacts
- Implement Transition Plan (annual update)

Conclusions

- MTS expected to have 20 ZEBs in service as “early adopters” before 2023 purchase requirements take effect
- Currently 49% of MTS daily vehicle assignments can be operated by depot charged, BEBs
- MTS transition plan meets or exceed the ZEB purchasing requirements of the ICT
- With MTS’s range improvement assumption (5% every two years), 94% of 40 assignment and 76% of 60 foot assignments can be operated by BEB’s by 2040
- The plan estimates in 2026, MTS will need to shift to a mixed option of ZEBs adding In-route and or fuel cell vehicles to their BEB fleet to operate assignments that exceed the range limitation with their cutaway fleet, and in 2035 for our heavy-duty bus fleet

Recommendations

That the Executive Committee:

- Provide feedback on Transition Plan
- Forward a recommendation to the Board of Directors authorizing staff to request an extension from CARB for submission of the Rollout Plan

Public Comments – Agenda Item #C1

1. Gretchen Newsom, IBEW 569
2. Carolina Martinez, Environmental Health Coalition
3. Esperanza Gonzalez, Community Member
4. Areli Santillan, Community Member
5. Alicia Sanchez, Community Member

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. C2

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
EXECUTIVE COMMITTEE

June 11, 2020

SUBJECT:

SURPLUS LAND AND JOINT DEVELOPMENT: ASSEMBLY BILL (AB) 1486 IMPACTS (KAREN LANDERS)

RECOMMENDATION:

That the Executive Committee receive a report and give direction to staff regarding potential impacts to the MTS Joint Development Program and compliance with AB 1486.

Budget Impact

There is no direct budget impact from this agenda item. AB 1486 may impact future MTS revenue by limiting MTS's ability to jointly develop its property and negotiate appropriate terms and conditions for such projects.

DISCUSSION:

In 2019, MTS revamped its Joint Development Program to re-set development priorities to focus on projects that "create vibrant, transit-oriented communities that offer a range of housing types, job opportunities, and services centered around public transit facilities." (Board Policy No. 18, Section C.) Board Policy No. 18 establishes affordable housing requirements for residential development proposals and imposes prevailing wage and skilled labor requirements on all joint development projects. The policy requires an open and competitive process for selecting joint development partners, and requires a 30-day minimum notice/request for additional proposals upon receipt of any unsolicited offer.

Although cities, counties, school districts and some other agencies have historically been required to follow a statutory "surplus land" process when disposing of land, such requirements did not apply to MTS. Historically, MTS has not be required to formally declare property to be "surplus land" before selling it or pursuing a joint development project. Moreover, even at cities and counties, certain ground lease and joint-use projects have not been considered a "disposition" of real estate that triggers the surplus

land process. This process has traditionally been limited to property that no longer has a public use or public facility connection.

AB 1486 (Ting), effective January 1, 2020, made significant changes to this process, especially as it relates to MTS. Although there are several portions of the new law that are vague, unclear, and contradictory, it generally appears to impose the following requirements on MTS (and other public agencies such as cities, counties, and special districts):

1. Requires MTS to do the following before it can participate in negotiations to sell or lease MTS property to a third party:

    a. Formally declare property to be "surplus land" or "exempt surplus land";
    b. Send a "Notice of Availability" to all of the following individuals or entities offering the property for affordable housing, open space, school or school open space purposes:
        i. for affordable housing purposes, the notice must be directed to the local public entity, including a tribal organization, with affordable housing authority, the State Housing and Community Development department, and any "housing sponsors" identified by HCD;
        ii. for open space purposes to city and county park and recreation departments, regional park authorities, and the State Resources Agency with jurisdiction over the property; and
        iii. for school or school open space purposes to the school district in the jurisdiction;
    c. The Notice of Availability must provide each entity at least 60 days to respond with a written notice of interest.
    d. MTS is required to enter into "good faith negotiations" with any party expressing interest in the property for at least 90 days.
    e. Prior to finalizing any real property transaction under these provisions, MTS shall report the conclusion of any negotiations to HCD and give HCD at least 30 days to review and determine if MTS properly complied with the law. If a violation is found by HCD, MTS will have 60 days to respond. If HCD disagrees with the MTS response, then it may issue a Notice of Violation to MTS that shall subject MTS to a penalty equaling 30% (first violation) or 50% (subsequent violations) of the final sale price for the land.

2. While AB 1486 defines "surplus land" as land owned in fee by an agency that the agency board has declared to be surplus and "not necessary for agency's use", it narrowly defines "agency's use" ***to exclude*** the following uses:

    a. Commercial or industrial uses or activities, including nongovernmental retail, entertainment, or office development.
    b. Property disposed of for generation of revenue to support agency

3. AB 1486 exempts certain types of small-scale or public agency-to-public agency transactions from this process. It also exempts projects that are competitively bid and offered for 100% affordable uses or a mixed-use project with at least 300 dwelling units and 25% of those units set aside as affordable. Various conditions on affordability also apply.

4. AB 1486 also includes various restrictions on terms and conditions that MTS may negotiate in the sale or lease of such property, including prohibiting terms that would:

    a. Disallow residential use on the property.
    b. Reduce the allowed dwelling unit per acre below zoning or general plan limits.
    c. Require design or architectural features that would have a "substantial adverse effect on the viability or affordability" of an affordable housing project, other than minimum zoning or general plan requirements.

5. If MTS receives multiple proposals pursuant to the Notice of Availability process, AB 1486 requires MTS to "give priority" to any proposal that provides at least 25% of the total units shall be affordable; if multiple proposals include this mandate, then priority shall be given to the highest number of affordable units, and then to the deepest average level of affordability. This requirement applies for all surplus property except for land currently used for park or recreation purposes, or dedicated for such purposes.

6. Even if MTS does not receive any expressions of interest in response to the formal Notice of Availability, MTS is required to record a restrictive covenant on all land transfers that would require any future project on the land that includes 10 or more dwelling units require at least 15% of the units shall be affordable.

The AB 1486 requirements apply to all sale or lease deals that were not part of a legally binding agreement, including an exclusive negotiating agreement, as of September 30, 2019, so long as the transaction is completed by December 31, 2022.

Staff is still determining the full impacts of AB 1486 on MTS's joint development program. One significant impact is that AB 1486 could prohibit MTS from deciding the best use of a property based on its location in the region and proximity to transit. In some locations, MTS's analysis may deem that a project that brings jobs near a transit center is more beneficial to MTS transit ridership and overall community Greenhouse Gas Emission Reduction goals as opposed to a residential project. Under the AB 1486, MTS would be required to give priority to affordable housing at every site.

It appears that the Grantville and Palm Avenue projects, which had legally binding agreements in place before September 30, 2019, are exempt from the AB 1486 requirements. However, the following upcoming projects, which are in various stages of negotiation, may be delayed or prohibited:

A. E Street Transit Center Joint Development Project with City of Chula Vista (RFP issued in September 2019 and proposals received December 2019; recommendation was being prepared for MTS Board and Chula Vista City Council; proposals included various proposed uses including residential (affordable and market), office, retail and hotel)
B. Baltimore Drive, La Mesa (Ground Lease negotiations underway after several open marketing attempts with proposed mixed-use developer; no transit connection at this site; some MTS maintenance activities will remain on site)
C. Cuyamaca Street, Santee (Sale negotiations underway – after updated appraisal obtained – to sell property to adjacent property owner for consolidation and future project; no transit connection at this site.)

D. Woodman Avenue, San Diego (Sale negotiations underway for excess portion with adjacent property owner for consolidation and future project)
E. Rancho Bernardo Transit Center (Unsolicited proposal under staff review; proposed affordable housing project but no "competitive bid")
F. Beyer Boulevard Transit Center (Unsolicited proposal under staff review; proposed affordable housing project but no "competitive bid")

In response to these potential impacts on MTS joint development program, MTS has various options, including:

- Re-start timeline for all pending projects and also any other properties that could potentially be defined as "surplus land" under AB 1486 by sending the required Notices of Availability and following the timeline (up to 286 days of notices and negotiations). This could delay or cause the current proposed projects to "lose the market" or otherwise be withdrawn.

- Seek clarifying or limiting language in subsequent legislation to preserve MTS's autonomy over its joint development program.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. MTS Board Policy No. 18 (Joint Development Program)
B. AB 1486 (Ting)
C. MTS AB 1486 Property List

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Policies and Procedures No. 18

SUBJECT: **Board Approval:** 7/25/19

JOINT DEVELOPMENT PROGRAM

PURPOSE:

MTS manages a portfolio of real property assets whose primary purpose is to fulfill the functional needs of transit operations. These real property assets can also be developed to enhance the financial stability of MTS operations, promote increased transit utilization, and achieve other community development objectives. MTS seeks to work in close partnership with its service area cities and the County of San Diego to identify and implement joint development opportunities. Promoting quality transit oriented development on or near the transit system can generate new opportunities to create direct and indirect revenue for MTS while contributing to environmentally sustainable livable communities that are focused on transit accessibility.

POLICIES:

A. Joint use and development of MTS property shall always prioritize transit operational needs above all other considerations.

   1. MTS shall preserve the ability to safely operate and maintain transportation facilities on its properties.

   2. For any development project pursued at an MTS park-and-ride, an analysis shall be undertaken to determine the appropriate level at which existing parking should be replaced, with full consideration of the relative growth in future ridership that can result from dense joint development.

   3. Development projects pursued under the Joint Development Program shall strive to include physical improvements and/or transit programs (such as free or subsidized transit passes) that encourage utilization of multi-modal transit services and increase long-term ridership.

B. Joint development projects are expected to generate value to MTS, either through direct/indirect revenue generation or through the construction of new transit facilities on behalf of MTS.

1. MTS shall not gift its assets.

2. Projects should minimize financial risk to MTS.

3. Due diligence in entering into a joint development with a third party should be performed to ensure the viability of the project.

C. MTS will seek projects that create vibrant, transit-oriented communities that offer a range of housing types, job opportunities, and services centered around public transit facilities.

1. Residential development projects pursued under the Joint Development Program shall strive to provide the highest possible residential density.

2. Development projects pursued under the Joint Development Program shall comply with all the review and approval policies and procedures of the local jurisdictions in which the respective projects are sited.

3. Development projects pursued under the Joint Development Program shall strive to incorporate the urban design standards of the localities with jurisdiction over them, and the “best practices” identified by industry leaders in transit-oriented development.

4. MTS shall encourage direct connections to transit stops and stations from surrounding development.

5. The Joint Development Program is intended to be consistent with State of California Greenhouse Gas reduction goals.

6. In recognition that residents in affordable housing units have a higher likelihood for transit utilization, residential joint development proposals shall include a minimum set aside of 20% of units for very low (<50% Average Median Income (AMI)) and low (51-80% AMI) income households.

7. All projects approved pursuant to the program shall be considered public works for purposes of Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code, regardless of whether an exemption under Section 1720 of the Labor Code applies to the project.

8. A joint development agreement between MTS and a private entity shall include a requirement that the developer’s construction comply with Public Utilities Code section 120221.5.

D. In order to promote the best possible projects for joint development, MTS shall engage in an open and competitive solicitation for choosing development partners. In the event that MTS receives an unsolicited proposal, MTS shall publically notice the unsolicited bid and allow for other development interests to submit a competing proposal within 30 days for consideration by the MTS Board of Directors.

IMPLEMENTATION PROCESS:

A. The Chief Executive Officer shall develop written procedures necessary to fully implement this Policy within 3 months of its adoption. The written procedures shall be approved by the MTS Board of Directors.

B. MTS shall identify right-of-way property and facilities and keep such inventory current. All property so inventoried shall be analyzed for its availability for joint use or development by either sale or lease. This inventory shall be reviewed by the MTS Board annually. Included in this inventory will be a listing of all agreements and their current status.

Original Policy approved on 3/8/82.
Policy revised on 12/20/84.
Policy revised on 2/8/96.
Policy revised on 6/26/97.
Policy revised/renumbered on 2/12/04.
Policy revised on 1/18/07.
Policy revised on 10/11/18.
Policy revised on 7/25/19.

Assembly Bill No. 1486

CHAPTER 664

An act to amend Sections 54220, 54221, 54222, 54222.3, 54223, 54225, 54226, 54227, 54230.5, 54233, and 65583.2 of, and to add Sections 54230.6, 54233.5, 54234, 65400.1, and 65585.1 to, the Government Code, relating to surplus land.

[Approved by Governor October 9, 2019. Filed with Secretary of State October 9, 2019.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1486, Ting. Surplus land.

(1) Existing law prescribes requirements for the disposal of surplus land by a local agency. Existing law defines "local agency" for these purposes as every city, county, city and county, and district, including school districts of any kind or class, empowered to acquire and hold real property. Existing law defines "surplus land" for these purposes as land owned by any local agency that is determined to be no longer necessary for the agency's use, except property being held by the agency for the purpose of exchange. Existing law defines "exempt surplus land" to mean land that is less than 5,000 square feet in area, less than the applicable minimum legal residential building lot size, or has no record access and is less than 10,000 square feet in area, and that is not contiguous to land owned by a state or local agency and used for park, recreational, open-space, or affordable housing.

This bill would expand the definition of "local agency" to include sewer, water, utility, and local and regional park districts, joint powers authorities, successor agencies to former redevelopment agencies, housing authorities, and other political subdivisions of this state and any instrumentality thereof that is empowered to acquire and hold real property, thereby requiring these entities to comply with these requirements for the disposal of surplus land. The bill would specify that the term "district" includes all districts within the state, and that this change is declaratory of existing law. The bill would revise the definition of "surplus land" to mean land owned in fee simple by any local agency, for which the local agency's governing body takes formal action, in a regular public meeting, declaring, supported by written findings, that the land is surplus and is not necessary for the agency's use, as defined. The bill would provide that "surplus land" for these purposes includes land held in the Community Redevelopment Property Trust Fund and land that has been designated in the long-range property management plan, either for sale or for future development, as specified. The bill would also broaden the definition of "exempt surplus land" to include specified types of lands.

(2) Existing law requires a local agency disposing of surplus land to send, prior to disposing of that property, a written offer to sell or lease the property

to specified entities. Existing law requires that a local agency, upon a written request, send a written offer to sell or lease surplus land to a housing sponsor, as defined, for the purpose of developing low- and moderate-income housing. Existing law also requires the local agency to send a written offer to sell or lease surplus land for the purpose of developing property located within an infill opportunity zone, designated as provided, to, among others, a community redevelopment agency.

This bill would instead require, except as provided, the local agency disposing of surplus land to send, prior to disposing of that property or participating in negotiations to dispose of that property with a prospective transferee, a written notice of availability. The bill would make various related conforming changes. With regards to a housing sponsor, the bill would require that a notice of availability be sent if the housing sponsor has notified the Department of Housing and Community Development of its interest in the land, rather than upon written request. With regards to surplus land to be used for the purpose of developing property located within an infill opportunity zone, as described above, the bill would instead require that the written notice of availability be sent to a successor agency to a former redevelopment agency. The bill would require the Department of Housing and Community Development to maintain an up-to-date listing of all notices of availability throughout the state on its internet website.

(3) After the disposing agency has received a notice from an entity desiring to purchase or lease the land, existing law requires the disposing agency to enter into good faith negotiations to determine a mutually satisfactory sales price or lease terms.

This bill would prohibit the terms agreed to pursuant to these negotiations from doing certain things, including, among other things, disallowing residential use of the site as a condition of the sale or lease.

(4) Existing law requires a local agency to give priority to the development of affordable housing for lower income elderly or disabled persons or households, and other lower income households when disposing of surplus land.

This bill would remove that priority.

(5) If the local agency receives offers from more than one entity that agrees to meet specified requirements related to the provision of affordable housing on the surplus land, existing law requires the local agency to give priority to the entity that proposes to provide the greatest number of units that meet those requirements. Notwithstanding that requirement, existing law requires the local agency to give first priority to an entity in specified circumstances.

In the event that more than one entity proposes the same number of units that meet the above-described affordable housing requirements, this bill would require that priority be given to the entity that proposes the deepest average level of affordability for the affordable units. The bill would authorize a local agency to negotiate concurrently with all entities that provide notice of interest to purchase or lease land for the purpose of developing affordable housing.

(6) Under existing law, failure by a local agency to comply with these requirements for the disposal of surplus land does not invalidate the transfer or conveyance of real property to a purchaser or encumbrancer for value.

This bill would require a local agency, prior to agreeing to terms for the disposition of surplus land, to provide the Department of Housing and Community Development with a specified description of the process followed to dispose of the land and a copy of any recorded restrictions against the property, as specified, in a form prescribed by the Department of Housing and Community Development. The bill would require the Department of Housing and Community Development to, among other things, review the description and submit written findings to the local agency within 30 days of receiving the description if the proposed disposal of the land will violate specified provisions of law. The bill would require the Department of Housing and Community Development to provide the local agency a reasonable time, as specified, to respond to the department's findings prior to taking certain actions and would require the local agency to take specified actions in response.

This bill would, with certain exceptions, impose a penalty of 30% of the final sale price of the land upon a local agency that disposes of land in violation of specified provisions of law after receiving the notification from the Department of Housing and Community Development to that effect, and a 50% penalty for subsequent violations. The bill would authorize specified entities or persons to bring an action against a local agency to enforce these provisions and would allow a local agency 60 days to cure or correct an alleged violation before the action may be brought, except as specified. The bill would require a penalty assessed pursuant to these provisions to be deposited into a local housing trust fund or, in certain circumstances, the Building Homes and Jobs Trust Fund or the Housing Rehabilitation Loan Fund, as provided. The bill would make the expenditure of penalty moneys deposited into the Building Homes and Jobs Trust Fund or the Housing Rehabilitation Loan Fund pursuant to these provisions subject to appropriation by the Legislature.

This bill would require the department to implement these provisions commencing on January 1, 2021.

(7) If a local agency does not agree to price and terms with an entity to which notice and an opportunity to purchase or lease are given and disposes of the surplus land to an entity that uses the property for the development of 10 or more residential units, existing law requires the purchasing entity or a successor in interest to provide not less than 15% of the total number of units developed on the parcels at an affordable housing cost or affordable rent to lower income households.

This bill would revise this requirement to apply if the local agency does not agree to price and terms with an entity to which notice of availability of land was given, or if no entity to which a notice of availability was given responds to that notice, and 10 or more residential units are developed on the property.

This bill, if a local agency that is a district, except as specified, disposes of surplus land where local zoning permits development of 10 or more residential units or is rezoned within 5 years of the disposal to permit the development of 10 or more residential units, and 10 or more residential units are developed on the property, would require not less than 15% of the total number of residential units developed on the parcel to be sold or rented at affordable housing cost or affordable rent to lower income households.

(8) The Planning and Zoning Law requires a city or county to adopt a general plan for land use development within its boundaries that includes, among other things, a housing element. That law requires the planning agency of a city or county to provide by April 1 of each year an annual report to, among other entities, the Department of Housing and Community Development that includes, among other specified information, the number of net new units of housing that have been issued a completed entitlement, a building permit, or a certificate of occupancy thus far in the housing element cycle, as provided.

This bill would require a city or county to include as a part of that report a listing of specified sites owned by the city or county that have been sold, leased, or otherwise disposed of in the prior year.

The Planning and Zoning Law requires that the housing element include, among other things, an inventory of land suitable for residential development to be used to identify sites that can be developed for housing within the planning period and that are sufficient to provide for the jurisdiction's share of the regional housing need determined pursuant to specified law.

This bill would require the housing element to provide a description of nonvacant sites owned by the city or county and provide whether there are any plans to dispose of the property during the planning period and how the city or county will comply with specified provisions relating to the disposal of surplus land by a local agency.

(9) Existing law requires the Department of Housing and Community Development to notify a city or county and authorize notice to the Attorney General when a city or county has taken an action that violates the Housing Accountability Act, specified provisions relating to local housing elements, and the Density Bonus Law.

This bill would also require the Department of Housing and Community Development to notify the city or county and authorizes notice to the Attorney General when the city or county has taken an action that violates these provisions relating to surplus property.

(10) Existing law makes various findings and declarations as to the need for affordable housing and the use of surplus government land for that purpose.

This bill would revise these findings.

(11) This bill would incorporate additional changes to Section 65583.2 of the Government Code proposed by AB 957 to be operative only if this bill and AB 957 are enacted and this bill is enacted last.

(12) By adding to the duties of local officials with respect to the disposal of surplus land, and expanding the scope of local agencies subject to the bill's requirements, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to the statutory provisions noted above.

The people of the State of California do enact as follows:

SECTION 1. Section 54220 of the Government Code is amended to read:

54220. (a) The Legislature reaffirms its declaration that housing is of vital statewide importance to the health, safety, and welfare of the residents of this state and that provision of a decent home and a suitable living environment for every Californian is a priority of the highest order. The Legislature further declares that a shortage of sites available for housing for persons and families of low and moderate income is a barrier to addressing urgent statewide housing needs and that surplus government land, prior to disposition, should be made available for that purpose.

(b) The Legislature reaffirms its belief that there is an identifiable deficiency in the amount of land available for recreational purposes and that surplus land, prior to disposition, should be made available for park and recreation purposes or for open-space purposes. This article shall not apply to surplus residential property as defined in Section 54236.

(c) The Legislature reaffirms its declaration of the importance of appropriate planning and development near transit stations, to encourage the clustering of housing and commercial development around such stations. Studies of transit ridership in California indicate that a higher percentage of persons who live or work within walking distance of major transit stations utilize the transit system more than those living elsewhere, and that lower income households are more likely to use transit when living near a major transit station than higher income households. The sale or lease of surplus land at less than fair market value to facilitate the creation of affordable housing near transit is consistent with goals and objectives to achieve optimal transportation use. The Legislature also notes that the Federal Transit Administration gives priority for funding of rail transit proposals to areas that are implementing higher density, mixed-use, and affordable development near major transit stations.

SEC. 2. Section 54221 of the Government Code is amended to read:

54221. As used in this article, the following definitions shall apply:

(a) (1) "Local agency" means every city, whether organized under general law or by charter, county, city and county, district, including school, sewer,

water, utility, and local and regional park districts of any kind or class, joint powers authority, successor agency to a former redevelopment agency, housing authority, or other political subdivision of this state and any instrumentality thereof that is empowered to acquire and hold real property.

(2) The Legislature finds and declares that the term "district" as used in this article includes all districts within the state, including, but not limited to, all special districts, sewer, water, utility, and local and regional park districts, and any other political subdivision of this state that is a district, and therefore the changes in paragraph (1) made by the act adding this paragraph that specify that the provisions of this article apply to all districts, including school, sewer, water, utility, and local and regional park districts of any kind or class, are declaratory of, and not a change in, existing law.

(b) (1) "Surplus land" means land owned in fee simple by any local agency for which the local agency's governing body takes formal action in a regular public meeting declaring that the land is surplus and is not necessary for the agency's use. Land shall be declared either "surplus land" or "exempt surplus land," as supported by written findings, before a local agency may take any action to dispose of it consistent with an agency's policies or procedures. A local agency, on an annual basis, may declare multiple parcels as "surplus land" or "exempt surplus land."

(2) "Surplus land" includes land held in the Community Redevelopment Property Trust Fund pursuant to Section 34191.4 of the Health and Safety Code and land that has been designated in the long-range property management plan approved by the Department of Finance pursuant to Section 34191.5 of the Health and Safety Code, either for sale or for future development, but does not include any specific disposal of land to an identified entity described in the plan.

(3) Nothing in this article prevents a local agency from obtaining fair market value for the disposition of surplus land consistent with Section 54226.

(c) (1) Except as provided in paragraph (2), "agency's use" shall include, but not be limited to, land that is being used, is planned to be used pursuant to a written plan adopted by the local agency's governing board for, or is disposed to support pursuant to subparagraph (B) of paragraph (2) agency work or operations, including, but not limited to, utility sites, watershed property, land being used for conservation purposes, land for demonstration, exhibition, or educational purposes related to greenhouse gas emissions, and buffer sites near sensitive governmental uses, including, but not limited to, waste water treatment plants.

(2) (A) "Agency's use" shall not include commercial or industrial uses or activities, including nongovernmental retail, entertainment, or office development. Property disposed of for the sole purpose of investment or generation of revenue shall not be considered necessary for the agency's use.

(B) In the case of a local agency that is a district, excepting those whose primary mission or purpose is to supply the public with a transportation system, "agency's use" may include commercial or industrial uses or

activities, including nongovernmental retail, entertainment, or office development or be for the sole purpose of investment or generation of revenue if the agency's governing body takes action in a public meeting declaring that the use of the site will do one of the following:

(i) Directly further the express purpose of agency work or operations.

(ii) Be expressly authorized by a statute governing the local agency, provided the district complies with Section 54233.5 where applicable.

(d) "Open-space purposes" means the use of land for public recreation, enjoyment of scenic beauty, or conservation or use of natural resources.

(e) "Persons and families of low or moderate income" has the same meaning as provided in Section 50093 of the Health and Safety Code.

(f) (1) Except as provided in paragraph (2), "exempt surplus land" means any of the following:

(A) Surplus land that is transferred pursuant to Section 25539.4.

(B) Surplus land that is (i) less than 5,000 square feet in area, (ii) less than the minimum legal residential building lot size for the jurisdiction in which the parcel is located, or 5,000 square feet in area, whichever is less, or (iii) has no record access and is less than 10,000 square feet in area; and is not contiguous to land owned by a state or local agency that is used for open-space or low- and moderate-income housing purposes. If the surplus land is not sold to an owner of contiguous land, it is not considered exempt surplus land and is subject to this article.

(C) Surplus land that a local agency is exchanging for another property necessary for the agency's use.

(D) Surplus land that a local agency is transferring to another local, state, or federal agency for the agency's use.

(E) Surplus land that is a former street, right of way, or easement, and is conveyed to an owner of an adjacent property.

(F) Surplus land that is put out to open, competitive bid by a local agency, provided all entities identified in subdivision (a) of Section 54222 will be invited to participate in the competitive bid process, for either of the following purposes:

(i) A housing development, which may have ancillary commercial ground floor uses, that restricts 100 percent of the residential units to persons and families of low or moderate income, with at least 75 percent of the residential units restricted to lower income households, as defined in Section 50079.5 of the Health and Safety Code, with an affordable sales price or an affordable rent, as defined in Sections 50052.5 or 50053 of the Health and Safety Code, for a minimum of 55 years for rental housing and 45 years for ownership housing, and in no event shall the maximum affordable sales price or rent level be higher than 20 percent below the median market rents or sales prices for the neighborhood in which the site is located.

(ii) A mixed-use development that is more than one acre in area, that includes not less than 300 housing units, and that restricts at least 25 percent of the residential units to lower income households, as defined in Section 50079.5 of the Health and Safety Code, with an affordable sales price or an affordable rent, as defined in Sections 50052.5 and 50053 of the Health and

Safety Code, for a minimum of 55 years for rental housing and 45 years for ownership housing.

(G) Surplus land that is subject to valid legal restrictions that are not imposed by the local agency and that would make housing prohibited, unless there is a feasible method to satisfactorily mitigate or avoid the prohibition on the site. An existing nonresidential land use designation on the surplus land is not a legal restriction that would make housing prohibited for purposes of this subparagraph. Nothing in this article limits a local jurisdiction's authority or discretion to approve land use, zoning, or entitlement decisions in connection with the surplus land.

(H) Surplus land that was granted by the state in trust to a local agency or that was acquired by the local agency for trust purposes by purchase or exchange, and for which disposal of the land is authorized or required subject to conditions established by statute.

(I) Land that is subject to Sections 17388, 17515, 17536, 81192, 81397, 81399, 81420, and 81422 of the Education Code and Part 14 (commencing with Section 53570) of Division 31 of the Health and Safety Code, unless compliance with this article is expressly required.

(J) Real property that is used by a district for agency's use expressly authorized in subdivision (c).

(K) Land that has been transferred before June 30, 2019, by the state to a local agency pursuant to Section 32667 of the Streets and Highways Code and has a minimum planned residential density of at least one hundred dwelling units per acre, and includes 100 or more residential units that are restricted to persons and families of low or moderate income, as defined in Section 50093 of the Health and Safety Code, with an affordable sales price or an affordable rent, as defined in Sections 50052.5 and 50053 of the Health and Safety Code, for a minimum of 55 years for rental housing and 45 years for ownership housing. For purposes of this paragraph, not more than 20 percent of the affordable units may be restricted to persons and families of moderate income and at least 80 percent of the affordable units must be restricted to persons and families of lower income as defined in Section 50079.5 of the Health and Safety Code.

(2) Notwithstanding paragraph (1), a written notice of the availability of surplus land for open-space purposes shall be sent to the entities described in subdivision (b) of Section 54222 prior to disposing of the surplus land, provided the land does not meet the criteria in subparagraph (H) of paragraph (1), if the land is any of the following:

(A) Within a coastal zone.

(B) Adjacent to a historical unit of the State Parks System.

(C) Listed on, or determined by the State Office of Historic Preservation to be eligible for, the National Register of Historic Places.

(D) Within the Lake Tahoe region as defined in Section 66905.5.

SEC. 3. Section 54222 of the Government Code is amended to read:

54222. Except as provided in Division 23 (commencing with Section 33000) of the Public Resources Code, any local agency disposing of surplus land shall send, prior to disposing of that property or participating in

negotiations to dispose of that property with a prospective transferee, a written notice of availability of the property to all of the following:

(a) (1) A written notice of availability for the purpose of developing low- and moderate-income housing shall be sent to any local public entity, as defined in Section 50079 of the Health and Safety Code, within whose jurisdiction the surplus land is located. Housing sponsors, as defined by Section 50074 of the Health and Safety Code, that have notified the Department of Housing and Community Development of their interest in surplus land shall be sent a notice of availability of surplus land for the purpose of developing low- and moderate-income housing. All notices shall be sent by electronic mail, or by certified mail, and shall include the location and a description of the property.

(2) The Department of Housing and Community Development shall maintain on its internet website an up-to-date listing of all notices of availability throughout the state.

(b) A written notice of availability for open-space purposes shall be sent:

(1) To any park or recreation department of any city within which the land may be situated.

(2) To any park or recreation department of the county within which the land is situated.

(3) To any regional park authority having jurisdiction within the area in which the land is situated.

(4) To the State Resources Agency or any agency that may succeed to its powers.

(c) A written notice of availability of land suitable for school facilities construction or use by a school district for open-space purposes shall be sent to any school district in whose jurisdiction the land is located.

(d) A written notice of availability for the purpose of developing property located within an infill opportunity zone designated pursuant to Section 65088.4 or within an area covered by a transit village plan adopted pursuant to the Transit Village Development Planning Act of 1994 (Article 8.5 (commencing with Section 65460) of Chapter 3 of Division 1 of Title 7) shall be sent to any county, city, city and county, successor agency to a former redevelopment agency, public transportation agency, or housing authority within whose jurisdiction the surplus land is located.

(e) The entity or association desiring to purchase or lease the surplus land for any of the purposes authorized by this section shall notify in writing the disposing agency of its interest in purchasing or leasing the land within 60 days after the agency's notice of availability of the land is sent via certified mail or provided via electronic mail.

(f) For the purposes of this section, "participating in negotiations" does not include the commissioning of appraisals, due diligence prior to disposition, discussions with brokers or real estate agents not representing a potential buyer, or other studies to determine value or best use of land, issuance of a request for qualifications, development of marketing materials, or discussions conducted exclusively among local agency employees and elected officials.

SEC. 4. Section 54222.3 of the Government Code is amended to read:

54222.3. This article shall not apply to the disposal of exempt surplus land as defined in Section 54221 by an agency of the state or any local agency.

SEC. 5. Section 54223 of the Government Code is amended to read:

54223. (a) After the disposing agency has received a notice of interest from the entity desiring to purchase or lease the land on terms that comply with this article, the disposing agency and the entity shall enter into good faith negotiations to determine a mutually satisfactory sales price and terms or lease terms. If the price or terms cannot be agreed upon after a good faith negotiation period of not less than 90 days, the land may be disposed of without further regard to this article, except that Section 54233 shall apply.

(b) Residential use shall be deemed an acceptable use for the surplus land for the purposes of good faith negotiations with a local agency conducted pursuant to this article. Nothing in this subdivision shall restrict a local jurisdiction's authority or discretion to approve land use, zoning, or entitlement decisions in connection with the surplus land. Except as provided in subdivision (c), terms agreed to pursuant to the negotiations shall not do any of the following:

(1) Disallow residential use of the site as a condition of the disposal.

(2) Reduce the allowable number of residential units or the maximum lot coverage below what may be allowed by zoning or general plan requirements.

(3) Require as a condition of disposal, any design standards or architectural requirements that would have a substantial adverse effect on the viability or affordability of a housing development for very low, low-, or moderate-income households, other than the minimum standards required by general plan, zoning, and subdivision standards and criteria.

(c) Terms agreed to pursuant to the negotiations required by subdivision (a) may include limitations on residential use or density if, without the limitations, the residential use or density would have a specific, adverse impact, supported by written findings, upon the public health or safety or upon the operation or facilities of a local agency, and there is no feasible method to satisfactorily mitigate the impact.

SEC. 6. Section 54225 of the Government Code is amended to read:

54225. Any public agency disposing of surplus land to an entity described in Section 54222 that intends to use the land for park or recreation purposes, for open-space purposes, for school purposes, or for low- and moderate-income housing purposes may provide for a payment period of up to 20 years in any contract of sale or sale by trust deed for the land. The payment period for surplus land disposed of for housing for persons and families of low and moderate income may exceed 20 years, but the payment period shall not exceed the term that the land is required to be used for low- or moderate-income housing.

SEC. 7. Section 54226 of the Government Code is amended to read:

54226. This article shall not be interpreted to limit the power of any local agency to sell or lease surplus land at fair market value or at less than

fair market value, and any sale or lease at or less than fair market value consistent with this article shall not be construed as inconsistent with an agency's purpose. No provision of this article shall be applied when it conflicts with any other provision of statutory law.

SEC. 8. Section 54227 of the Government Code is amended to read:

54227. (a) In the event that any local agency disposing of surplus land receives a notice of interest to purchase or lease that land from more than one of the entities to which notice of available surplus land was given pursuant to this article, the local agency shall give first priority to the entity or entities that agree to use the site for housing that meets the requirements of Section 54222.5. If the local agency receives offers from more than one entity that agrees to meet the requirements of Section 54222.5, then the local agency shall give priority to the entity that proposes to provide the greatest number of units that meet the requirements of Section 54222.5. In the event that more than one entity proposes the same number of units that meet the requirements of Section 54222.5, priority shall be given to the entity that proposes the deepest average level of affordability for the affordable units. A local agency may negotiate concurrently with all entities that provide notice of interest for the purpose of developing affordable housing that meets the requirements of Section 54222.5.

(b) Notwithstanding subdivision (a), first priority shall be given to an entity that agrees to use the site for park or recreational purposes if the land being offered is already being used and will continue to be used for park or recreational purposes, or if the land is designated for park and recreational use in the local general plan and will be developed for that purpose.

SEC. 9. Section 54230.5 of the Government Code is amended to read:

54230.5. (a) (1) A local agency that disposes of land in violation of this article after receiving a notification from the Department of Housing and Community Development pursuant to subdivision (b) that the local agency is in violation of this article shall be liable for a penalty of 30 percent of the final sale price of the land sold in violation of this article for a first violation and 50 percent for any subsequent violation. An entity identified in Section 54222 or a person who would have been eligible to apply for residency in any affordable housing developed or a housing organization as defined in Section 65589.5, or any beneficially interested person or entity may bring an action to enforce this section. A local agency shall have 60 days to cure or correct an alleged violation before an action may be brought to enforce this section, unless the local agency disposes of the land before curing or correcting the alleged violation, or the department deems the alleged violation not to be a violation in less than 60 days.

(2) A penalty assessed pursuant to this subdivision shall, except as otherwise provided, be deposited into a local housing trust fund. The local agency may elect to instead deposit the penalty moneys into the Building Homes and Jobs Trust Fund or the Housing Rehabilitation Loan Fund. Penalties shall not be paid out of funds already dedicated to affordable housing, including, but not limited to, Low and Moderate Income Housing Asset Funds, funds dedicated to housing for very low, low-, and

moderate-income households, and federal HOME Investment Partnerships Program and Community Development Block Grant Program funds. The local agency shall commit and expend the penalty moneys deposited into the local housing trust fund within five years of deposit for the sole purpose of financing newly constructed housing units that are affordable to extremely low, very low, or low-income households.

(3) Five years after deposit of the penalty moneys into the local housing trust fund, if the funds have not been expended, the funds shall revert to the state and be deposited in the Building Homes and Jobs Trust Fund or the Housing Rehabilitation Loan Fund for the sole purpose of financing newly constructed housing units located in the same jurisdiction as the surplus land and that are affordable to extremely low, very low, or low-income households. Expenditure of any penalty moneys deposited into the Building Homes and Jobs Trust Fund or the Housing Rehabilitation Loan Fund pursuant to this subdivision shall be subject to appropriation by the Legislature.

(b) (1) Prior to agreeing to terms for the disposition of surplus land, a local agency shall provide to the Department of Housing and Community Development a description of the notices of availability sent, and negotiations conducted with any responding entities, in regard to the disposal of the parcel of surplus land and a copy of any restrictions to be recorded against the property pursuant to Section 54233 or 54233.5, whichever is applicable, in a form prescribed by the Department of Housing and Community Development. A local agency may submit this information after it has sent notices of availability required by Section 54222 and concluded negotiations with any responding agencies. A local agency shall not be liable for the penalty imposed by subdivision (a) if the Department of Housing and Community Development does not notify the agency that the agency is in violation of this article within 30 days of receiving the description.

(2) The Department of Housing and Community Development shall do all of the following:

(A) Make available educational resources and materials that informs each agency of its obligations under this article and that provides guidance on how to comply with its provisions.

(B) Review information submitted pursuant to paragraph (1).

(C) Submit written findings to the local agency within 30 days of receipt of the description required by paragraph (1) from the local agency if the proposed disposal of the land will violate this article.

(D) Review, adopt, amend, or repeal guidelines to establish uniform standards to implement this section. The guidelines adopted pursuant to this subdivision are not subject to Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2.

(E) Provide the local agency reasonable time, but not less than 60 days, to respond to the findings before taking any other action authorized by this section.

(3) (A) The local agency shall consider findings made by the Department of Housing and Community Development pursuant to subparagraph (B) of paragraph (2) and shall do one of the following:

(i) Correct any issues identified by the Department of Housing and Community Development.

(ii) Provide written findings explaining the reason its process for disposing of surplus land complies with this article and addressing the Department of Housing and Community Development's findings.

(B) If the local agency does not correct issues identified by the Department of Housing and Community Development, does not provide findings explaining the reason its process for disposing of surplus land complies with this article and addressing the Department of Housing and Community Development's findings, or if the Department of Housing and Community Development finds that the local agency's findings are deficient in addressing the issues identified by the Department of Housing and Community Development, the Department of Housing and Community Development shall notify the local agency, and may notify the Attorney General, that the local agency is in violation of this article.

(c) The Department of Housing and Community Development shall implement the changes in this section made by the act adding this subdivision commencing on January 1, 2021.

(d) Notwithstanding subdivision (c), this section shall not be construed to limit any other remedies authorized under law to enforce this article including public records act requests pursuant to Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1.

SEC. 10. Section 54230.6 is added to the Government Code, to read:

54230.6. The failure by a local agency to comply with this article shall not invalidate the transfer or conveyance of real property to a purchaser or encumbrancer for value.

SEC. 11. Section 54233 of the Government Code is amended to read:

54233. If the local agency does not agree to price and terms with an entity to which notice of availability of land was given pursuant to this article, or if no entity to which a notice of availability was given pursuant to this article responds to that notice, and 10 or more residential units are developed on the property, not less than 15 percent of the total number of residential units developed on the parcels shall be sold or rented at affordable housing cost, as defined in Section 50052.5 of the Health and Safety Code, or affordable rent, as defined in Section 50053 of the Health and Safety Code, to lower income households, as defined in Section 50079.5 of the Health and Safety Code. Rental units shall remain affordable to, and occupied by, lower income households for a period of at least 55 years for rental housing and 45 years for ownership housing. The initial occupants of all ownership units shall be lower income households, and the units shall be subject to an equity sharing agreement consistent with the provisions of paragraph (2) of subdivision (c) of Section 65915. These requirements shall be contained in a covenant or restriction recorded against the surplus land prior to land use entitlement of the project, and the covenant or restriction

shall run with the land and shall be enforceable, against any owner who violates a covenant or restriction and each successor in interest who continues the violation, by any of the entities described in subdivisions (a) to (f), inclusive, of Section 54222.5. A local agency shall provide a copy of any restrictions recorded against the property to the Department of Housing and Community Development on a form prescribed by the department.

SEC. 12. Section 54233.5 is added to the Government Code, to read:

54233.5. If a local agency that is a district, excepting those whose primary mission or purpose is to supply the public with a transportation system, disposes of surplus land where local zoning permits development of 10 or more residential units or is rezoned within five years of the disposal to permit the development of 10 or more residential units, and 10 or more residential units are developed on the property, not less than 15 percent of the total number of residential units developed on the parcel shall be sold or rented at affordable housing cost, as defined in Section 50052.5 of the Health and Safety Code, or affordable rent, as defined in Section 50053 of the Health and Safety Code, to lower income households as defined in Section 50079.5 of the Health and Safety Code. Rental units shall remain affordable to, and occupied by, lower income households for a period of at least 55 years for rental housing and 45 years for ownership housing. The initial occupants of all ownership units shall be lower income households, and the units shall be subject to an equity sharing agreement consistent with the provisions of paragraph (2) of subdivision (c) of Section 65915. These requirements shall be contained in a covenant or restriction recorded against the restriction and each successor in interest who continues the violation, by any of the entities described in subdivisions (a) to (f), inclusive, of Section 54222.5. This section shall not apply to projects as defined in subdivision (j) of Section 32121 of the Health and Safety Code. A local agency shall provide a copy of any restrictions recorded against the property to the Department of Housing and Community Development in a form prescribed by the department.

SEC. 13. Section 54234 is added to the Government Code, to read:

54234. (a) (1) If a local agency, as of September 30, 2019, has entered into an exclusive negotiating agreement or legally binding agreement to dispose of property, the provisions of this article as it existed on December 31, 2019, shall apply, without regard to the changes made to this article by the act adding this section, to the disposition of the property to the party that had entered into such agreement or its successors or assigns, provided the disposition is completed not later than December 31, 2022.

(2) The dates specified in paragraph (1) by which the disposition of property must be completed shall be extended if the disposition of property, the local agency's right or ability to dispose of the property, or a development project for which such property is proposed to be transferred, is the subject of judicial challenge, by petition for writ of mandate, complaint for declaratory relief or otherwise, to the date that is six months following the final conclusion of such litigation.

(b) (1) With respect to land held in the Community Redevelopment Property Trust Fund pursuant to Section 34191.4 of the Health and Safety Code, or that has been designated in a long-range property management plan pursuant to Section 34191.5 of the Health and Safety Code, either for sale or retained for future development, this article as it existed on December 31, 2019, without regard to the changes made to this article by the act adding this section which take effect on January 1, 2020, shall apply to the disposition of such property if both of the following apply:

(A) An exclusive negotiating agreement or legally binding agreement for disposition is entered into not later than December 31, 2020.

(B) The disposition is completed not later than December 31, 2022.

(2) If land described in paragraph (1) is the subject of litigation, including, but not limited to, litigation challenging the disposition of such property, the right or ability to dispose of the property, or a development project for which such property is proposed to be transferred, the dates specified in paragraph (1) shall be extended to the date that is six months following the final conclusion of such litigation.

(c) Nothing in this section shall authorize or excuse any violation of the provisions of this article as it existed on December 31, 2019, in the disposition of any property to which such provisions apply pursuant to subdivision (a) or (b).

SEC. 14. Section 65400.1 is added to the Government Code, to read:

65400.1. In the annual report provided by the planning agency to the legislative body, the Office of Planning and Research, and the Department of Housing and Community Development required pursuant to paragraph (2) of subdivision (a) of Section 65400, the planning agency shall also include a listing of sites owned by the city or county and included in the inventory prepared pursuant to Section 65583.2 that have been sold, leased, or otherwise disposed of in the prior year. The list shall include the entity to whom each site was transferred and the intended use for the site.

SEC. 15. Section 65583.2 of the Government Code, as amended by Section 3 of Chapter 958 of the Statutes of 2018, is amended to read:

65583.2. (a) A city's or county's inventory of land suitable for residential development pursuant to paragraph (3) of subdivision (a) of Section 65583 shall be used to identify sites throughout the community, consistent with paragraph (9) of subdivision (c) of Section 65583, that can be developed for housing within the planning period and that are sufficient to provide for the jurisdiction's share of the regional housing need for all income levels pursuant to Section 65584. As used in this section, "land suitable for residential development" includes all of the sites that meet the standards set forth in subdivisions (c) and (g):

(1) Vacant sites zoned for residential use.

(2) Vacant sites zoned for nonresidential use that allows residential development.

(3) Residentially zoned sites that are capable of being developed at a higher density, including the airspace above sites owned or leased by a city, county, or city and county.

(4) Sites zoned for nonresidential use that can be redeveloped for residential use, and for which the housing element includes a program to rezone the site, as necessary, rezoned for, to permit residential use, including sites owned or leased by a city, county, or city and county.

(b) The inventory of land shall include all of the following:

(1) A listing of properties by assessor parcel number.

(2) The size of each property listed pursuant to paragraph (1), and the general plan designation and zoning of each property.

(3) For nonvacant sites, a description of the existing use of each property. If a site subject to this paragraph is owned by the city or county, the description shall also include whether there are any plans to dispose of the property during the planning period and how the city or county will comply with Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5.

(4) A general description of any environmental constraints to the development of housing within the jurisdiction, the documentation for which has been made available to the jurisdiction. This information need not be identified on a site-specific basis.

(5) (A) A description of existing or planned water, sewer, and other dry utilities supply, including the availability and access to distribution facilities.

(B) Parcels included in the inventory must have sufficient water, sewer, and dry utilities supply available and accessible to support housing development or be included in an existing general plan program or other mandatory program or plan, including a program or plan of a public or private entity providing water or sewer service, to secure sufficient water, sewer, and dry utilities supply to support housing development. This paragraph does not impose any additional duty on the city or county to construct, finance, or otherwise provide water, sewer, or dry utilities to parcels included in the inventory.

(6) Sites identified as available for housing for above moderate-income households in areas not served by public sewer systems. This information need not be identified on a site-specific basis.

(7) A map that shows the location of the sites included in the inventory, such as the land use map from the jurisdiction's general plan, for reference purposes only.

(c) Based on the information provided in subdivision (b), a city or county shall determine whether each site in the inventory can accommodate the development of some portion of its share of the regional housing need by income level during the planning period, as determined pursuant to Section 65584. The inventory shall specify for each site the number of units that can realistically be accommodated on that site and whether the site is adequate to accommodate lower income housing, moderate-income housing, or above moderate-income housing. A nonvacant site identified pursuant to paragraph (3) or (4) of subdivision (a) in a prior housing element and a vacant site that has been included in two or more consecutive planning periods that was not approved to develop a portion of the locality's housing need shall not be deemed adequate to accommodate a portion of the housing

need for lower income households that must be accommodated in the current housing element planning period unless the site is zoned at residential densities consistent with paragraph (3) of this subdivision and the site is subject to a program in the housing element requiring rezoning within three years of the beginning of the planning period to allow residential use by right for housing developments in which at least 20 percent of the units are affordable to lower income households. A city that is an unincorporated area in a nonmetropolitan county pursuant to clause (ii) of subparagraph (B) of paragraph (3) shall not be subject to the requirements of this subdivision to allow residential use by right. The analysis shall determine whether the inventory can provide for a variety of types of housing, including multifamily rental housing, factory-built housing, mobilehomes, housing for agricultural employees, supportive housing, single-room occupancy units, emergency shelters, and transitional housing. The city or county shall determine the number of housing units that can be accommodated on each site as follows:

(1) If local law or regulations require the development of a site at a minimum density, the department shall accept the planning agency's calculation of the total housing unit capacity on that site based on the established minimum density. If the city or county does not adopt a law or regulation requiring the development of a site at a minimum density, then it shall demonstrate how the number of units determined for that site pursuant to this subdivision will be accommodated.

(2) The number of units calculated pursuant to paragraph (1) shall be adjusted as necessary, based on the land use controls and site improvements requirement identified in paragraph (5) of subdivision (a) of Section 65583, the realistic development capacity for the site, typical densities of existing or approved residential developments at a similar affordability level in that jurisdiction, and on the current or planned availability and accessibility of sufficient water, sewer, and dry utilities.

(A) A site smaller than half an acre shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site is adequate to accommodate lower income housing.

(B) A site larger than 10 acres shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site can be developed as lower income housing. For purposes of this subparagraph, "site" means that portion of a parcel or parcels designated to accommodate lower income housing needs pursuant to this subdivision.

(C) A site may be presumed to be realistic for development to accommodate lower income housing need if, at the time of the adoption of

the housing element, a development affordable to lower income households has been proposed and approved for development on the site.

(3) For the number of units calculated to accommodate its share of the regional housing need for lower income households pursuant to paragraph (2), a city or county shall do either of the following:

(A) Provide an analysis demonstrating how the adopted densities accommodate this need. The analysis shall include, but is not limited to, factors such as market demand, financial feasibility, or information based on development project experience within a zone or zones that provide housing for lower income households.

(B) The following densities shall be deemed appropriate to accommodate housing for lower income households:

(i) For an incorporated city within a nonmetropolitan county and for a nonmetropolitan county that has a micropolitan area: sites allowing at least 15 units per acre.

(ii) For an unincorporated area in a nonmetropolitan county not included in clause (i): sites allowing at least 10 units per acre.

(iii) For a suburban jurisdiction: sites allowing at least 20 units per acre.

(iv) For a jurisdiction in a metropolitan county: sites allowing at least 30 units per acre.

(d) For purposes of this section, a metropolitan county, nonmetropolitan county, and nonmetropolitan county with a micropolitan area shall be as determined by the United States Census Bureau. A nonmetropolitan county with a micropolitan area includes the following counties: Del Norte, Humboldt, Lake, Mendocino, Nevada, Tehama, and Tuolumne and other counties as may be determined by the United States Census Bureau to be nonmetropolitan counties with micropolitan areas in the future.

(e) (1) Except as provided in paragraph (2), a jurisdiction shall be considered suburban if the jurisdiction does not meet the requirements of clauses (i) and (ii) of subparagraph (B) of paragraph (3) of subdivision (c) and is located in a Metropolitan Statistical Area (MSA) of less than 2,000,000 in population, unless that jurisdiction's population is greater than 100,000, in which case it shall be considered metropolitan. A county, not including the City and County of San Francisco, shall be considered suburban unless the county is in an MSA of 2,000,000 or greater in population in which case the county shall be considered metropolitan.

(2) (A) (i) Notwithstanding paragraph (1), if a county that is in the San Francisco-Oakland-Fremont California MSA has a population of less than 400,000, that county shall be considered suburban. If this county includes an incorporated city that has a population of less than 100,000, this city shall also be considered suburban. This paragraph shall apply to a housing element revision cycle, as described in subparagraph (A) of paragraph (3) of subdivision (e) of Section 65588, that is in effect from July 1, 2014, to December 31, 2028, inclusive.

(ii) A county subject to this subparagraph shall utilize the sum existing in the county's housing trust fund as of June 30, 2013, for the development

and preservation of housing affordable to low- and very low income households.

(B) A jurisdiction that is classified as suburban pursuant to this paragraph shall report to the Assembly Committee on Housing and Community Development, the Senate Committee on Housing, and the Department of Housing and Community Development regarding its progress in developing low- and very low income housing consistent with the requirements of Section 65400. The report shall be provided three times: once, on or before December 31, 2019, which report shall address the initial four years of the housing element cycle, a second time, on or before December 31, 2023, which report shall address the subsequent four years of the housing element cycle, and a third time, on or before December 31, 2027, which report shall address the subsequent four years of the housing element cycle and the cycle as a whole. The reports shall be provided consistent with the requirements of Section 9795.

(f) A jurisdiction shall be considered metropolitan if the jurisdiction does not meet the requirements for "suburban area" above and is located in an MSA of 2,000,000 or greater in population, unless that jurisdiction's population is less than 25,000 in which case it shall be considered suburban.

(g) (1) For sites described in paragraph (3) of subdivision (b), the city or county shall specify the additional development potential for each site within the planning period and shall provide an explanation of the methodology used to determine the development potential. The methodology shall consider factors including the extent to which existing uses may constitute an impediment to additional residential development, the city's or county's past experience with converting existing uses to higher density residential development, the current market demand for the existing use, an analysis of any existing leases or other contracts that would perpetuate the existing use or prevent redevelopment of the site for additional residential development, development trends, market conditions, and regulatory or other incentives or standards to encourage additional residential development on these sites.

(2) In addition to the analysis required in paragraph (1), when a city or county is relying on nonvacant sites described in paragraph (3) of subdivision (b) to accommodate 50 percent or more of its housing need for lower income households, the methodology used to determine additional development potential shall demonstrate that the existing use identified pursuant to paragraph (3) of subdivision (b) does not constitute an impediment to additional residential development during the period covered by the housing element. An existing use shall be presumed to impede additional residential development, absent findings based on substantial evidence that the use is likely to be discontinued during the planning period.

(3) Notwithstanding any other law, and in addition to the requirements in paragraphs (1) and (2), sites that currently have residential uses, or within the past five years have had residential uses that have been vacated or demolished, that are or were subject to a recorded covenant, ordinance, or law that restricts rents to levels affordable to persons and families of low

or very low income, subject to any other form of rent or price control through a public entity's valid exercise of its police power, or occupied by low or very low income households, shall be subject to a policy requiring the replacement of all those units affordable to the same or lower income level as a condition of any development on the site. Replacement requirements shall be consistent with those set forth in paragraph (3) of subdivision (c) of Section 65915.

(h) The program required by subparagraph (A) of paragraph (1) of subdivision (c) of Section 65583 shall accommodate 100 percent of the need for housing for very low and low-income households allocated pursuant to Section 65584 for which site capacity has not been identified in the inventory of sites pursuant to paragraph (3) of subdivision (a) on sites that shall be zoned to permit owner-occupied and rental multifamily residential use by right for developments in which at least 20 percent of the units are affordable to lower income households during the planning period. These sites shall be zoned with minimum density and development standards that permit at least 16 units per site at a density of at least 16 units per acre in jurisdictions described in clause (i) of subparagraph (B) of paragraph (3) of subdivision (c), shall be at least 20 units per acre in jurisdictions described in clauses (iii) and (iv) of subparagraph (B) of paragraph (3) of subdivision (c) and shall meet the standards set forth in subparagraph (B) of paragraph (5) of subdivision (b). At least 50 percent of the very low and low-income housing need shall be accommodated on sites designated for residential use and for which nonresidential uses or mixed uses are not permitted, except that a city or county may accommodate all of the very low and low-income housing need on sites designated for mixed uses if those sites allow 100 percent residential use and require that residential use occupy 50 percent of the total floor area of a mixed-use project.

(i) For purposes of this section and Section 65583, the phrase "use by right" shall mean that the local government's review of the owner-occupied or multifamily residential use may not require a conditional use permit, planned unit development permit, or other discretionary local government review or approval that would constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Any subdivision of the sites shall be subject to all laws, including, but not limited to, the local government ordinance implementing the Subdivision Map Act. A local ordinance may provide that "use by right" does not exempt the use from design review. However, that design review shall not constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Use by right for all rental multifamily residential housing shall be provided in accordance with subdivision (f) of Section 65589.5.

(j) Notwithstanding any other provision of this section, within one-half mile of a Sonoma-Marin Area Rail Transit station, housing density requirements in place on June 30, 2014, shall apply.

(k) For purposes of subdivisions (a) and (b), the department shall provide guidance to local governments to properly survey, detail, and account for sites listed pursuant to Section 65585.

(*l*) This section shall remain in effect only until December 31, 2028, and as of that date is repealed.

SEC. 15.5. Section 65583.2 of the Government Code, as amended by Section 3 of Chapter 958 of the Statutes of 2018, is amended to read:

65583.2. (a) A city's or county's inventory of land suitable for residential development pursuant to paragraph (3) of subdivision (a) of Section 65583 shall be used to identify sites throughout the community, consistent with paragraph (9) of subdivision (c) of Section 65583, that can be developed for housing within the planning period and that are sufficient to provide for the jurisdiction's share of the regional housing need for all income levels pursuant to Section 65584. As used in this section, "land suitable for residential development" includes all of the sites that meet the following standards set forth in subdivisions (c) and (g):

(1) Vacant sites zoned for residential use.

(2) Vacant sites zoned for nonresidential use that allows residential development.

(3) Residentially zoned sites that are capable of being developed at a higher density, including sites owned or leased by a city, county, or city and county.

(4) Sites zoned for nonresidential use that can be redeveloped for residential use, and for which the housing element includes a program to rezone the site, as necessary, rezoned for, to permit residential use, including sites owned or leased by a city, county, or city and county.

(b) The inventory of land shall include all of the following:

(1) A listing of properties by assessor parcel number.

(2) The size of each property listed pursuant to paragraph (1), and the general plan designation and zoning of each property.

(3) For nonvacant sites, a description of the existing use of each property. If a site subject to this paragraph is owned by the city or county, the description shall also include whether there are any plans to dispose of the property during the planning period and how the city or county will comply with Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5.

(4) A general description of any environmental constraints to the development of housing within the jurisdiction, the documentation for which has been made available to the jurisdiction. This information need not be identified on a site-specific basis.

(5) (A) A description of existing or planned water, sewer, and other dry utilities supply, including the availability and access to distribution facilities.

(B) Parcels included in the inventory must have sufficient water, sewer, and dry utilities supply available and accessible to support housing development or be included in an existing general plan program or other mandatory program or plan, including a program or plan of a public or private entity providing water or sewer service, to secure sufficient water,

sewer, and dry utilities supply to support housing development. This paragraph does not impose any additional duty on the city or county to construct, finance, or otherwise provide water, sewer, or dry utilities to parcels included in the inventory.

(6) Sites identified as available for housing for above moderate-income households in areas not served by public sewer systems. This information need not be identified on a site-specific basis.

(7) A map that shows the location of the sites included in the inventory, such as the land use map from the jurisdiction's general plan, for reference purposes only.

(c) Based on the information provided in subdivision (b), a city or county shall determine whether each site in the inventory can accommodate the development of some portion of its share of the regional housing need by income level during the planning period, as determined pursuant to Section 65584. The inventory shall specify for each site the number of units that can realistically be accommodated on that site and whether the site is adequate to accommodate lower income housing, moderate-income housing, or above moderate-income housing. A nonvacant site identified pursuant to paragraph (3) or (4) of subdivision (a) in a prior housing element and a vacant site that has been included in two or more consecutive planning periods that was not approved to develop a portion of the locality's housing need shall not be deemed adequate to accommodate a portion of the housing need for lower income households that must be accommodated in the current housing element planning period unless the site is zoned at residential densities consistent with paragraph (3) of this subdivision and the site is subject to a program in the housing element requiring rezoning within three years of the beginning of the planning period to allow residential use by right for housing developments in which at least 20 percent of the units are affordable to lower income households. An unincorporated area in a nonmetropolitan county pursuant to clause (ii) of subparagraph (B) of paragraph (3) shall not be subject to the requirements of this subdivision to allow residential use by right. The analysis shall determine whether the inventory can provide for a variety of types of housing, including multifamily rental housing, factory-built housing, mobilehomes, housing for agricultural employees, supportive housing, single-room occupancy units, emergency shelters, and transitional housing. The city or county shall determine the number of housing units that can be accommodated on each site as follows:

(1) If local law or regulations require the development of a site at a minimum density, the department shall accept the planning agency's calculation of the total housing unit capacity on that site based on the established minimum density. If the city or county does not adopt a law or regulation requiring the development of a site at a minimum density, then it shall demonstrate how the number of units determined for that site pursuant to this subdivision will be accommodated.

(2) The number of units calculated pursuant to paragraph (1) shall be adjusted as necessary, based on the land use controls and site improvements requirement identified in paragraph (5) of subdivision (a) of Section 65583,

the realistic development capacity for the site, typical densities of existing or approved residential developments at a similar affordability level in that jurisdiction, and on the current or planned availability and accessibility of sufficient water, sewer, and dry utilities.

(A) A site smaller than half an acre shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site is adequate to accommodate lower income housing.

(B) A site larger than 10 acres shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site can be developed as lower income housing. For purposes of this subparagraph, "site" means that portion of a parcel or parcels designated to accommodate lower income housing needs pursuant to this subdivision.

(C) A site may be presumed to be realistic for development to accommodate lower income housing need if, at the time of the adoption of the housing element, a development affordable to lower income households has been proposed and approved for development on the site.

(3) For the number of units calculated to accommodate its share of the regional housing need for lower income households pursuant to paragraph (2), a city or county shall do either of the following:

(A) Provide an analysis demonstrating how the adopted densities accommodate this need. The analysis shall include, but is not limited to, factors such as market demand, financial feasibility, or information based on development project experience within a zone or zones that provide housing for lower income households.

(B) The following densities shall be deemed appropriate to accommodate housing for lower income households:

(i) For an incorporated city within a nonmetropolitan county and for a nonmetropolitan county that has a micropolitan area: sites allowing at least 15 units per acre.

(ii) For an unincorporated area in a nonmetropolitan county not included in clause (i): sites allowing at least 10 units per acre.

(iii) For a suburban jurisdiction: sites allowing at least 20 units per acre.

(iv) For a jurisdiction in a metropolitan county: sites allowing at least 30 units per acre.

(d) For purposes of this section, a metropolitan county, nonmetropolitan county, and nonmetropolitan county with a micropolitan area shall be as determined by the United States Census Bureau. A nonmetropolitan county with a micropolitan area includes the following counties: Del Norte, Humboldt, Lake, Mendocino, Nevada, Tehama, and Tuolumne and other

counties as may be determined by the United States Census Bureau to be nonmetropolitan counties with micropolitan areas in the future.

(e) (1) Except as provided in paragraph (2), a jurisdiction shall be considered suburban if the jurisdiction does not meet the requirements of clauses (i) and (ii) of subparagraph (B) of paragraph (3) of subdivision (c) and is located in a Metropolitan Statistical Area (MSA) of less than 2,000,000 in population, unless that jurisdiction's population is greater than 100,000, in which case it shall be considered metropolitan. A county, not including the City and County of San Francisco, shall be considered suburban unless the county is in an MSA of 2,000,000 or greater in population in which case the county shall be considered metropolitan.

(2) (A) (i) Notwithstanding paragraph (1), if a county that is in the San Francisco-Oakland-Fremont California MSA has a population of less than 400,000, that county shall be considered suburban. If this county includes an incorporated city that has a population of less than 100,000, this city shall also be considered suburban. This paragraph shall apply to a housing element revision cycle, as described in subparagraph (A) of paragraph (3) of subdivision (e) of Section 65588, that is in effect from July 1, 2014, to December 31, 2028, inclusive.

(ii) A county subject to this subparagraph shall utilize the sum existing in the county's housing trust fund as of June 30, 2013, for the development and preservation of housing affordable to low- and very low income households.

(B) A jurisdiction that is classified as suburban pursuant to this paragraph shall report to the Assembly Committee on Housing and Community Development, the Senate Committee on Housing, and the Department of Housing and Community Development regarding its progress in developing low- and very low income housing consistent with the requirements of Section 65400. The report shall be provided three times: once, on or before December 31, 2019, which report shall address the initial four years of the housing element cycle, a second time, on or before December 31, 2023, which report shall address the subsequent four years of the housing element cycle, and a third time, on or before December 31, 2027, which report shall address the subsequent four years of the housing element cycle and the cycle as a whole. The reports shall be provided consistent with the requirements of Section 9795.

(f) A jurisdiction shall be considered metropolitan if the jurisdiction does not meet the requirements for "suburban area" above and is located in an MSA of 2,000,000 or greater in population, unless that jurisdiction's population is less than 25,000 in which case it shall be considered suburban.

(g) (1) For sites described in paragraph (3) of subdivision (b), the city or county shall specify the additional development potential for each site within the planning period and shall provide an explanation of the methodology used to determine the development potential. The methodology shall consider factors including the extent to which existing uses may constitute an impediment to additional residential development, the city's or county's past experience with converting existing uses to higher density

residential development, the current market demand for the existing use, an analysis of any existing leases or other contracts that would perpetuate the existing use or prevent redevelopment of the site for additional residential development, development trends, market conditions, and regulatory or other incentives or standards to encourage additional residential development on these sites.

(2) In addition to the analysis required in paragraph (1), when a city or county is relying on nonvacant sites described in paragraph (3) of subdivision (b) to accommodate 50 percent or more of its housing need for lower income households, the methodology used to determine additional development potential shall demonstrate that the existing use identified pursuant to paragraph (3) of subdivision (b) does not constitute an impediment to additional residential development during the period covered by the housing element. An existing use shall be presumed to impede additional residential development, absent findings based on substantial evidence that the use is likely to be discontinued during the planning period.

(3) Notwithstanding any other law, and in addition to the requirements in paragraphs (1) and (2), sites that currently have residential uses, or within the past five years have had residential uses that have been vacated or demolished, that are or were subject to a recorded covenant, ordinance, or law that restricts rents to levels affordable to persons and families of low or very low income, subject to any other form of rent or price control through a public entity's valid exercise of its police power, or occupied by low or very low income households, shall be subject to a policy requiring the replacement of all those units affordable to the same or lower income level as a condition of any development on the site. Replacement requirements shall be consistent with those set forth in paragraph (3) of subdivision (c) of Section 65915.

(h) The program required by subparagraph (A) of paragraph (1) of subdivision (c) of Section 65583 shall accommodate 100 percent of the need for housing for very low and low-income households allocated pursuant to Section 65584 for which site capacity has not been identified in the inventory of sites pursuant to paragraph (3) of subdivision (a) on sites that shall be zoned to permit owner-occupied and rental multifamily residential use by right for developments in which at least 20 percent of the units are affordable to lower income households during the planning period. These sites shall be zoned with minimum density and development standards that permit at least 16 units per site at a density of at least 16 units per acre in jurisdictions described in clause (i) of subparagraph (B) of paragraph (3) of subdivision (c), shall be at least 20 units per acre in jurisdictions described in clauses (iii) and (iv) of subparagraph (B) of paragraph (3) of subdivision (c) and shall meet the standards set forth in subparagraph (B) of paragraph (5) of subdivision (b). At least 50 percent of the very low and low-income housing need shall be accommodated on sites designated for residential use and for which nonresidential uses or mixed uses are not permitted, except that a city or county may accommodate all of the very low and low-income housing need on sites designated for mixed uses if those sites allow 100 percent

residential use and require that residential use occupy 50 percent of the total floor area of a mixed-use project.

(i) For purposes of this section and Section 65583, the phrase "use by right" shall mean that the local government's review of the owner-occupied or multifamily residential use may not require a conditional use permit, planned unit development permit, or other discretionary local government review or approval that would constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Any subdivision of the sites shall be subject to all laws, including, but not limited to, the local government ordinance implementing the Subdivision Map Act. A local ordinance may provide that "use by right" does not exempt the use from design review. However, that design review shall not constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Use by right for all rental multifamily residential housing shall be provided in accordance with subdivision (f) of Section 65589.5.

(j) Notwithstanding any other provision of this section, within one-half mile of a Sonoma-Marin Area Rail Transit station, housing density requirements in place on June 30, 2014, shall apply.

(k) For purposes of subdivisions (a) and (b), the department shall provide guidance to local governments to properly survey, detail, and account for sites listed pursuant to Section 65585.

(*l*) This section shall remain in effect only until December 31, 2028, and as of that date is repealed.

SEC. 16. Section 65583.2 of the Government Code, as amended by Section 4 of Chapter 958 of the Statutes of 2018, is amended to read:

65583.2. (a) A city's or county's inventory of land suitable for residential development pursuant to paragraph (3) of subdivision (a) of Section 65583 shall be used to identify sites throughout the community, consistent with paragraph (9) of subdivision (c) of Section 65583, that can be developed for housing within the planning period and that are sufficient to provide for the jurisdiction's share of the regional housing need for all income levels pursuant to Section 65584. As used in this section, "land suitable for residential development" includes all of the sites that meet the standards set forth in subdivisions (c) and (g):

(1) Vacant sites zoned for residential use.

(2) Vacant sites zoned for nonresidential use that allows residential development.

(3) Residentially zoned sites that are capable of being developed at a higher density, and sites owned or leased by a city, county, or city and county.

(4) Sites zoned for nonresidential use that can be redeveloped for residential use, and for which the housing element includes a program to rezone the sites, as necessary, to permit residential use, including sites owned or leased by a city, county, or city and county.

(b) The inventory of land shall include all of the following:

(1) A listing of properties by assessor parcel number.

(2) The size of each property listed pursuant to paragraph (1), and the general plan designation and zoning of each property.

(3) For nonvacant sites, a description of the existing use of each property. If a site subject to this paragraph is owned by the city or county, the description shall also include whether there are any plans to dispose of the property during the planning period and how the city or county will comply with Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5.

(4) A general description of any environmental constraints to the development of housing within the jurisdiction, the documentation for which has been made available to the jurisdiction. This information need not be identified on a site-specific basis.

(5) (A) A description of existing or planned water, sewer, and other dry utilities supply, including the availability and access to distribution facilities.

(B) Parcels included in the inventory must have sufficient water, sewer, and dry utilities supply available and accessible to support housing development or be included in an existing general plan program or other mandatory program or plan, including a program or plan of a public or private entity providing water or sewer service, to secure sufficient water, sewer, and dry utilities supply to support housing development. This paragraph does not impose any additional duty on the city or county to construct, finance, or otherwise provide water, sewer, or dry utilities to parcels included in the inventory.

(6) Sites identified as available for housing for above moderate-income households in areas not served by public sewer systems. This information need not be identified on a site-specific basis.

(7) A map that shows the location of the sites included in the inventory, such as the land use map from the jurisdiction's general plan for reference purposes only.

(c) Based on the information provided in subdivision (b), a city or county shall determine whether each site in the inventory can accommodate the development of some portion of its share of the regional housing need by income level during the planning period, as determined pursuant to Section 65584. The inventory shall specify for each site the number of units that can realistically be accommodated on that site and whether the site is adequate to accommodate lower income housing, moderate-income housing, or above moderate-income housing. A nonvacant site identified pursuant to paragraph (3) or (4) of subdivision (a) in a prior housing element and a vacant site that has been included in two or more consecutive planning periods that was not approved to develop a portion of the locality's housing need shall not be deemed adequate to accommodate a portion of the housing need for lower income households that must be accommodated in the current housing element planning period unless the site is zoned at residential densities consistent with paragraph (3) of this subdivision and the site is subject to a program in the housing element requiring rezoning within three years of the beginning of the planning period to allow residential use by right for housing developments in which at least 20 percent of the units are

affordable to lower income households. A city that is an unincorporated area in a nonmetropolitan county pursuant to clause (ii) of subparagraph (B) of paragraph (3) shall not be subject to the requirements of this subdivision to allow residential use by right. The analysis shall determine whether the inventory can provide for a variety of types of housing, including multifamily rental housing, factory-built housing, mobilehomes, housing for agricultural employees, supportive housing, single-room occupancy units, emergency shelters, and transitional housing. The city or county shall determine the number of housing units that can be accommodated on each site as follows:

(1) If local law or regulations require the development of a site at a minimum density, the department shall accept the planning agency's calculation of the total housing unit capacity on that site based on the established minimum density. If the city or county does not adopt a law or regulation requiring the development of a site at a minimum density, then it shall demonstrate how the number of units determined for that site pursuant to this subdivision will be accommodated.

(2) The number of units calculated pursuant to paragraph (1) shall be adjusted as necessary, based on the land use controls and site improvements requirement identified in paragraph (5) of subdivision (a) of Section 65583, the realistic development capacity for the site, typical densities of existing or approved residential developments at a similar affordability level in that jurisdiction, and on the current or planned availability and accessibility of sufficient water, sewer, and dry utilities.

(A) A site smaller than half an acre shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site is adequate to accommodate lower income housing.

(B) A site larger than 10 acres shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site can be developed as lower income housing. For purposes of this subparagraph, "site" means that portion of a parcel or parcels designated to accommodate lower income housing needs pursuant to this subdivision.

(C) A site may be presumed to be realistic for development to accommodate lower income housing need if, at the time of the adoption of the housing element, a development affordable to lower income households has been proposed and approved for development on the site.

(3) For the number of units calculated to accommodate its share of the regional housing need for lower income households pursuant to paragraph (2), a city or county shall do either of the following:

(A) Provide an analysis demonstrating how the adopted densities accommodate this need. The analysis shall include, but is not limited to, factors such as market demand, financial feasibility, or information based on development project experience within a zone or zones that provide housing for lower income households.

(B) The following densities shall be deemed appropriate to accommodate housing for lower income households:

(i) For an incorporated city within a nonmetropolitan county and for a nonmetropolitan county that has a micropolitan area: sites allowing at least 15 units per acre.

(ii) For an unincorporated area in a nonmetropolitan county not included in clause (i): sites allowing at least 10 units per acre.

(iii) For a suburban jurisdiction: sites allowing at least 20 units per acre.

(iv) For a jurisdiction in a metropolitan county: sites allowing at least 30 units per acre.

(d) For purposes of this section, a metropolitan county, nonmetropolitan county, and nonmetropolitan county with a micropolitan area shall be as determined by the United States Census Bureau. A nonmetropolitan county with a micropolitan area includes the following counties: Del Norte, Humboldt, Lake, Mendocino, Nevada, Tehama, and Tuolumne and other counties as may be determined by the United States Census Bureau to be nonmetropolitan counties with micropolitan areas in the future.

(e) A jurisdiction shall be considered suburban if the jurisdiction does not meet the requirements of clauses (i) and (ii) of subparagraph (B) of paragraph (3) of subdivision (c) and is located in a Metropolitan Statistical Area (MSA) of less than 2,000,000 in population, unless that jurisdiction's population is greater than 100,000, in which case it shall be considered metropolitan. A county, not including the City and County of San Francisco, shall be considered suburban unless the county is in an MSA of 2,000,000 or greater in population in which case the county shall be considered metropolitan.

(f) A jurisdiction shall be considered metropolitan if the jurisdiction does not meet the requirements for "suburban area" above and is located in an MSA of 2,000,000 or greater in population, unless that jurisdiction's population is less than 25,000 in which case it shall be considered suburban.

(g) (1) For sites described in paragraph (3) of subdivision (b), the city or county shall specify the additional development potential for each site within the planning period and shall provide an explanation of the methodology used to determine the development potential. The methodology shall consider factors including the extent to which existing uses may constitute an impediment to additional residential development, the city's or county's past experience with converting existing uses to higher density residential development, the current market demand for the existing use, an analysis of any existing leases or other contracts that would perpetuate the existing use or prevent redevelopment of the site for additional residential development, development trends, market conditions, and regulatory or

other incentives or standards to encourage additional residential development on these sites.

(2) In addition to the analysis required in paragraph (1), when a city or county is relying on nonvacant sites described in paragraph (3) of subdivision (b) to accommodate 50 percent or more of its housing need for lower income households, the methodology used to determine additional development potential shall demonstrate that the existing use identified pursuant to paragraph (3) of subdivision (b) does not constitute an impediment to additional residential development during the period covered by the housing element. An existing use shall be presumed to impede additional residential development, absent findings based on substantial evidence that the use is likely to be discontinued during the planning period.

(3) Notwithstanding any other law, and in addition to the requirements in paragraphs (1) and (2), sites that currently have residential uses, or within the past five years have had residential uses that have been vacated or demolished, that are or were subject to a recorded covenant, ordinance, or law that restricts rents to levels affordable to persons and families of low or very low income, subject to any other form of rent or price control through a public entity's valid exercise of its police power, or occupied by low or very low income households, shall be subject to a policy requiring the replacement of all those units affordable to the same or lower income level as a condition of any development on the site. Replacement requirements shall be consistent with those set forth in paragraph (3) of subdivision (c) of Section 65915.

(h) The program required by subparagraph (A) of paragraph (1) of subdivision (c) of Section 65583 shall accommodate 100 percent of the need for housing for very low and low-income households allocated pursuant to Section 65584 for which site capacity has not been identified in the inventory of sites pursuant to paragraph (3) of subdivision (a) on sites that shall be zoned to permit owner-occupied and rental multifamily residential use by right for developments in which at least 20 percent of the units are affordable to lower income households during the planning period. These sites shall be zoned with minimum density and development standards that permit at least 16 units per site at a density of at least 16 units per acre in jurisdictions described in clause (i) of subparagraph (B) of paragraph (3) of subdivision (c), shall be at least 20 units per acre in jurisdictions described in clauses (iii) and (iv) of subparagraph (B) of paragraph (3) of subdivision (c), and shall meet the standards set forth in subparagraph (B) of paragraph (5) of subdivision (b). At least 50 percent of the very low and low-income housing need shall be accommodated on sites designated for residential use and for which nonresidential uses or mixed uses are not permitted, except that a city or county may accommodate all of the very low and low-income housing need on sites designated for mixed uses if those sites allow 100 percent residential use and require that residential use occupy 50 percent of the total floor area of a mixed uses project.

(i) For purposes of this section and Section 65583, the phrase "use by right" shall mean that the local government's review of the owner-occupied

or multifamily residential use may not require a conditional use permit, planned unit development permit, or other discretionary local government review or approval that would constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Any subdivision of the sites shall be subject to all laws, including, but not limited to, the local government ordinance implementing the Subdivision Map Act. A local ordinance may provide that "use by right" does not exempt the use from design review. However, that design review shall not constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Use by right for all rental multifamily residential housing shall be provided in accordance with subdivision (f) of Section 65589.5.

(j) For purposes of subdivisions (a) and (b), the department shall provide guidance to local governments to properly survey, detail, and account for sites listed pursuant to Section 65585.

(k) This section shall become operative on December 31, 2028.

SEC. 16.5. Section 65583.2 of the Government Code, as amended by Section 4 of Chapter 958 of the Statutes of 2018, is amended to read:

65583.2. (a) A city's or county's inventory of land suitable for residential development pursuant to paragraph (3) of subdivision (a) of Section 65583 shall be used to identify sites throughout the community, consistent with paragraph (9) of subdivision (c) of Section 65583, that can be developed for housing within the planning period and that are sufficient to provide for the jurisdiction's share of the regional housing need for all income levels pursuant to Section 65584. As used in this section, "land suitable for residential development" includes all of the following sites that meet the standards set forth in subdivisions (c) and (g):

(1) Vacant sites zoned for residential use.

(2) Vacant sites zoned for nonresidential use that allows residential development.

(3) Residentially zoned sites that are capable of being developed at a higher density, and sites owned or leased by a city, county, or city and county.

(4) Sites zoned for nonresidential use that can be redeveloped for residential use, and for which the housing element includes a program to rezone the site, as necessary, to permit residential use, including sites owned or leased by a city, county, or city and county.

(b) The inventory of land shall include all of the following:

(1) A listing of properties by assessor parcel number.

(2) The size of each property listed pursuant to paragraph (1), and the general plan designation and zoning of each property.

(3) For nonvacant sites, a description of the existing use of each property. If a site subject to this paragraph is owned by the city or county, the description shall also include whether there are any plans to dispose of the property during the planning period and how the city or county will comply with Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5.

(4) A general description of any environmental constraints to the development of housing within the jurisdiction, the documentation for which has been made available to the jurisdiction. This information need not be identified on a site-specific basis.

(5) (A) A description of existing or planned water, sewer, and other dry utilities supply, including the availability and access to distribution facilities.

(B) Parcels included in the inventory must have sufficient water, sewer, and dry utilities supply available and accessible to support housing development or be included in an existing general plan program or other mandatory program or plan, including a program or plan of a public or private entity providing water or sewer service, to secure sufficient water, sewer, and dry utilities supply to support housing development. This paragraph does not impose any additional duty on the city or county to construct, finance, or otherwise provide water, sewer, or dry utilities to parcels included in the inventory.

(6) Sites identified as available for housing for above moderate-income households in areas not served by public sewer systems. This information need not be identified on a site-specific basis.

(7) A map that shows the location of the sites included in the inventory, such as the land use map from the jurisdiction's general plan for reference purposes only.

(c) Based on the information provided in subdivision (b), a city or county shall determine whether each site in the inventory can accommodate the development of some portion of its share of the regional housing need by income level during the planning period, as determined pursuant to Section 65584. The inventory shall specify for each site the number of units that can realistically be accommodated on that site and whether the site is adequate to accommodate lower income housing, moderate-income housing, or above moderate-income housing. A nonvacant site identified pursuant to paragraph (3) or (4) of subdivision (a) in a prior housing element and a vacant site that has been included in two or more consecutive planning periods that was not approved to develop a portion of the locality's housing need shall not be deemed adequate to accommodate a portion of the housing need for lower income households that must be accommodated in the current housing element planning period unless the site is zoned at residential densities consistent with paragraph (3) of this subdivision and the site is subject to a program in the housing element requiring rezoning within three years of the beginning of the planning period to allow residential use by right for housing developments in which at least 20 percent of the units are affordable to lower income households. A city that is an unincorporated area in a nonmetropolitan county pursuant to clause (ii) of subparagraph (B) of paragraph (3) shall not be subject to the requirements of this subdivision to allow residential use by right. The analysis shall determine whether the inventory can provide for a variety of types of housing, including multifamily rental housing, factory-built housing, mobilehomes, housing for agricultural employees, supportive housing, single-room occupancy units, emergency shelters, and transitional housing. The city or county shall

determine the number of housing units that can be accommodated on each site as follows:

(1) If local law or regulations require the development of a site at a minimum density, the department shall accept the planning agency's calculation of the total housing unit capacity on that site based on the established minimum density. If the city or county does not adopt a law or regulation requiring the development of a site at a minimum density, then it shall demonstrate how the number of units determined for that site pursuant to this subdivision will be accommodated.

(2) The number of units calculated pursuant to paragraph (1) shall be adjusted as necessary, based on the land use controls and site improvements requirement identified in paragraph (5) of subdivision (a) of Section 65583, the realistic development capacity for the site, typical densities of existing or approved residential developments at a similar affordability level in that jurisdiction, and on the current or planned availability and accessibility of sufficient water, sewer, and dry utilities.

(A) A site smaller than half an acre shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site is adequate to accommodate lower income housing.

(B) A site larger than 10 acres shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income housing units as projected for the site or unless the locality provides other evidence to the department that the site can be developed as lower income housing. For purposes of this subparagraph, "site" means that portion of a parcel or parcels designated to accommodate lower income housing needs pursuant to this subdivision.

(C) A site may be presumed to be realistic for development to accommodate lower income housing need if, at the time of the adoption of the housing element, a development affordable to lower income households has been proposed and approved for development on the site.

(3) For the number of units calculated to accommodate its share of the regional housing need for lower income households pursuant to paragraph (2), a city or county shall do either of the following:

(A) Provide an analysis demonstrating how the adopted densities accommodate this need. The analysis shall include, but is not limited to, factors such as market demand, financial feasibility, or information based on development project experience within a zone or zones that provide housing for lower income households.

(B) The following densities shall be deemed appropriate to accommodate housing for lower income households:

(i) For an incorporated city within a nonmetropolitan county and for a nonmetropolitan county that has a micropolitan area: sites allowing at least 15 units per acre.

(ii) For an unincorporated area in a nonmetropolitan county not included in clause (i): sites allowing at least 10 units per acre.

(iii) For a suburban jurisdiction: sites allowing at least 20 units per acre.

(iv) For a jurisdiction in a metropolitan county: sites allowing at least 30 units per acre.

(d) For purposes of this section, a metropolitan county, nonmetropolitan county, and nonmetropolitan county with a micropolitan area shall be as determined by the United States Census Bureau. A nonmetropolitan county with a micropolitan area includes the following counties: Del Norte, Humboldt, Lake, Mendocino, Nevada, Tehama, and Tuolumne and other counties as may be determined by the United States Census Bureau to be nonmetropolitan counties with micropolitan areas in the future.

(e) A jurisdiction shall be considered suburban if the jurisdiction does not meet the requirements of clauses (i) and (ii) of subparagraph (B) of paragraph (3) of subdivision (c) and is located in a Metropolitan Statistical Area (MSA) of less than 2,000,000 in population, unless that jurisdiction's population is greater than 100,000, in which case it shall be considered metropolitan. A county, not including the City and County of San Francisco, shall be considered suburban unless the county is in an MSA of 2,000,000 or greater in population in which case the county shall be considered metropolitan.

(f) A jurisdiction shall be considered metropolitan if the jurisdiction does not meet the requirements for "suburban area" above and is located in an MSA of 2,000,000 or greater in population, unless that jurisdiction's population is less than 25,000 in which case it shall be considered suburban.

(g) (1) For sites described in paragraph (3) of subdivision (b), the city or county shall specify the additional development potential for each site within the planning period and shall provide an explanation of the methodology used to determine the development potential. The methodology shall consider factors including the extent to which existing uses may constitute an impediment to additional residential development, the city's or county's past experience with converting existing uses to higher density residential development, the current market demand for the existing use, an analysis of any existing leases or other contracts that would perpetuate the existing use or prevent redevelopment of the site for additional residential development, development trends, market conditions, and regulatory or other incentives or standards to encourage additional residential development on these sites.

(2) In addition to the analysis required in paragraph (1), when a city or county is relying on nonvacant sites described in paragraph (3) of subdivision (b) to accommodate 50 percent or more of its housing need for lower income households, the methodology used to determine additional development potential shall demonstrate that the existing use identified pursuant to paragraph (3) of subdivision (b) does not constitute an impediment to

additional residential development during the period covered by the housing element. An existing use shall be presumed to impede additional residential development, absent findings based on substantial evidence that the use is likely to be discontinued during the planning period.

(3) Notwithstanding any other law, and in addition to the requirements in paragraphs (1) and (2), sites that currently have residential uses, or within the past five years have had residential uses that have been vacated or demolished, that are or were subject to a recorded covenant, ordinance, or law that restricts rents to levels affordable to persons and families of low or very low income, subject to any other form of rent or price control through a public entity's valid exercise of its police power, or occupied by low or very low income households, shall be subject to a policy requiring the replacement of all those units affordable to the same or lower income level as a condition of any development on the site. Replacement requirements shall be consistent with those set forth in paragraph (3) of subdivision (c) of Section 65915.

(h) The program required by subparagraph (A) of paragraph (1) of subdivision (c) of Section 65583 shall accommodate 100 percent of the need for housing for very low and low-income households allocated pursuant to Section 65584 for which site capacity has not been identified in the inventory of sites pursuant to paragraph (3) of subdivision (a) on sites that shall be zoned to permit owner-occupied and rental multifamily residential use by right for developments in which at least 20 percent of the units are affordable to lower income households during the planning period. These sites shall be zoned with minimum density and development standards that permit at least 16 units per site at a density of at least 16 units per acre in jurisdictions described in clause (i) of subparagraph (B) of paragraph (3) of subdivision (c), shall be at least 20 units per acre in jurisdictions described in clauses (iii) and (iv) of subparagraph (B) of paragraph (3) of subdivision (c), and shall meet the standards set forth in subparagraph (B) of paragraph (5) of subdivision (b). At least 50 percent of the very low and low-income housing need shall be accommodated on sites designated for residential use and for which nonresidential uses or mixed uses are not permitted, except that a city or county may accommodate all of the very low and low-income housing need on sites designated for mixed uses if those sites allow 100 percent residential use and require that residential use occupy 50 percent of the total floor area of a mixed-use project.

(i) For purposes of this section and Section 65583, the phrase "use by right" shall mean that the local government's review of the owner-occupied or multifamily residential use may not require a conditional use permit, planned unit development permit, or other discretionary local government review or approval that would constitute a "project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Any subdivision of the sites shall be subject to all laws, including, but not limited to, the local government ordinance implementing the Subdivision Map Act. A local ordinance may provide that "use by right" does not exempt the use from design review. However, that design review shall not constitute a

"project" for purposes of Division 13 (commencing with Section 21000) of the Public Resources Code. Use by right for all rental multifamily residential housing shall be provided in accordance with subdivision (f) of Section 65589.5.

(j) For purposes of subdivisions (a) and (b), the department shall provide guidance to local governments to properly survey, detail, and account for sites listed pursuant to Section 65585.

(k) This section shall become operative on December 31, 2028.

SEC. 17. Section 65585.1 is added to the Government Code, to read:

65585.1. (a) The department shall notify the city, county, or city and county and may notify the office of the Attorney General that the city, county, or city and county is in violation of state law, as provided in subdivision (j) of Section 65585, as amended by Chapter 159 of the Statutes of 2019, if the department finds that any local government has taken an action in violation of Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5.

(b) Subdivisions (k), (*l*), (m), and (n) of Section 65585, as amended by Chapter 159 of the Statutes of 2019, shall apply for any violation of Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5. Any fines imposed pursuant to subdivision (*l*) of Section 65585 for a violation of Article 8 (commencing with Section 54220) of Chapter 5 of Part 1 of Division 2 of Title 5 and deposited into the Building Homes and Jobs Trust Fund shall be available for expenditure upon appropriation by the Legislature.

SEC. 18. (a) Section 15.5 of this bill incorporates amendments to Section 65583.2 of the Government Code, as amended by Section 3 of Chapter 958 of the Statutes of 2018, proposed by this bill and Assembly Bill 957. That section of this bill shall only become operative if (1) both bills are enacted and become effective on or before January 1, 2020, (2) each bill amends Section 65583.2 of the Government Code, as amended by Section 3 of Chapter 958 of the Statutes of 2018, and (3) this bill is enacted after Assembly Bill 957, in which case that code section, as amended by Assembly Bill 957, shall remain operative only until the operative date of this bill, at which time Section 15.5 of this bill shall become operative, and Section 15 of this bill shall not become operative.

(b) Section 16.5 of this bill incorporates amendments to Section 65583.2 of the Government Code, as amended by Section 4 of Chapter 958 of the Statutes of 2018, proposed by this bill and Assembly Bill 957. That section of this bill shall only become operative if (1) both bills are enacted and become effective on or before January 1, 2020, (2) each bill amends Section 65583.2 of the Government Code, as amended by Section 4 of Chapter 958 of the Statutes of 2018, and (3) this bill is enacted after Assembly Bill 957, in which case that code section, as amended by Assembly Bill 957, shall remain operative only until the operative date of this bill, at which time Section 16.5 of this bill shall become operative, and Section 16 of this bill shall not become operative.

SEC. 19. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

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APN	Property	Address	Type	Status	Acreage	Zoning	Other Information
559-126-04, 05, 12, 19; 559-141-11	24th Street	506 W 22nd St., National City	Active Transit Station	Opportunity Site	3.6	CL Limited Commercial	MTS will not consider sale. Ground lease only. Active transit use. Existing ground lease on portion of site.
567-031-26	Bayfront / E Street	750 E Street, Chula Vista	Active Transit Station	RFQ/P Pending	4.2	Urban Corps Specific Plan	MTS will not consider sale. Ground lease only. Active transit use. Active solicitation
567-190-29	H Street	745 H Street, Chula Vista	Active Transit Station	Opportunity Site	3.1	Urban Corps Specific Plan	MTS will not consider sale. Ground lease only. Active transit use.
622-081-27, 28	Palomar Street	1265 Industrial Avenue, Chula Vista	Active Transit Station	Opportunity Site	5	MU-1 Palomar Gateway District Specific Plan / ILP Limited Industrial Precise Plan	MTS will not consider sale. Ground lease only. Active transit use.
628-050-50, 60	Palm Avenue	2340 Palm Avenue, San Diego	Active Transit Station	Current Negotiations	4	Otay Mesa - Nestor Community Plan	MTS will not consider sale. Ground lease only. Active transit use. Currently in an exclusive negotiation for development.
630-040-04; 630-321-17	Iris Avenue	3120 Iris Avenue, San Diego	Active Transit Station	Opportunity Site	2.8	Otay Mesa - Nestor Community Plan	MTS will not consider sale. Ground lease only. Active transit use.
638-140-07, 08, 11	Beyer Boulevard	4035 Beyer Boulevard, San Diego	Active Transit Station	Unsolicited Proposal	1.6	CC-3-6, San Ysidro Historic Village Specific Plan of the San Ysidro Community Plan	MTS will not consider sale. Ground lease only. Active transit use. Received an unsolicited offer for development.
547-200-51, 52, 53	47th Street	350 47th Street, San Diego	Active Transit Station	Opportunity Site	4	MF - 3000 (1du per 3000sf)	MTS will not consider sale. Ground lease only. Active transit use. Currently ground leased. Additional acreage available.
548-020-19, 20	Euclid Avenue	450 Euclid Avenue, San Diego	Active Transit Station	Opportunity Site	2.5	Community Mixed Use - Medium, Encanto Neighborhoods Community Plan	MTS will not consider sale. Ground lease only. Active transit use.
576-302-01; 576-303-03	Massachusetts Avenue	1787 San Altos Place, Lemon Grove	Active Transit Station	Opportunity Site	3	RLM, Residential Low Medium	MTS will not consider sale. Ground lease only. Active transit use.
499-020-08, 18, 34, 40	Spring Street	4250 Spring Street, La Mesa	Active Transit Station	Opportunity Site	2.2	Multiple Unit Residential, R3-P-D; Suburban Residential, R1S	MTS will not consider sale. Ground lease only. Active transit use.
490-210-27, 37, 39	Amaya Drive	9100 Amaya Drive, La Mesa	Active Transit Station	Opportunity Site	2.2	Residential Business / Grossmont Overlay / Urban Design Overlay (RB, G, D)	MTS will not consider sale. Ground lease only. Active transit use.
487-261-03, 04, 05, 06, 07, 08, 12, 14, 15; 487-262-04, 07, 09; 487-271-01, 02; 487-272-10; 487-273-03, 06, 07	El Cajon Transit Center	352 South Marshall Avenue, El Cajon	Active Transit Station	Opportunity Site	7.2	Transit District Specific Plan, Residential - 60 du per acre	MTS will not consider sale. Ground lease only. Active transit use.
461-320-07, 12, 29	Grantville	4510 Alvarado Canyon Road, San Diego	Active Transit Station	Under Contract	9.4	CC-3-9	Currently under contract for development
535-612-01, 535-613-04	12th and Imperial Transit Center	1344 National Avenue, San Diego	Active Transit Station	Opportunity Site	2.5	Downtown Specific Plan	MTS will not consider sale. Ground lease only. Portion of property to be used for transit center expansion.
469-020-31, 32, 33, 34	70th Street	7255 Alvarado Road, San Diego	Active Transit Station	Opportunity Site	1.4	Light Industrial Commercial Service (CM-F-D)	MTS will not consider sale. Ground lease only. Active transit use.
678-252-15	Rancho Bernardo Transit Center	16785 W Bernardo Dr., San Diego	Active Transit Station	Unsolicited Proposal	4.7	CV-1-2, RM-2-5	MTS will not consider sale. Ground lease only. Active transit use. Received an unsolicited offer for development.
677-020-80	San Ysidro Bus Terminal	724 Rail Court, San Diego	Intercity Bus Terminal	Leased - Bus Terminal	0.6		Leased for an intercity bus terminal
384-041-07	Buena Vista Lot	8733 Cuyamaca St., Santee	Vacant lot	Vacant - under negotiation	0.3	General Commercial	Under negotiation for sale to adjoining owner
384-311-38	Northwest Prospect Lot	8606 Cuyamaca St., Santee	Vacant lot	Vacant	0.5	General Commercial	
545-401-27	Gillette Street - Vacant Lot	3261 Gillette St., San Diego	Vacant lot	Vacant	0.4		
549-181-05	Woodman Excess	6645 Imperial Ave., San Diego	Vacant lot	Vacant - under negotiation	0.2	Cn-1-3, Commercial Neighborhood, Neighborhood Mixed Use - Medium	Under negotiation for sale to adjoining owner
470-050-16	Baltimore Drive	5159 Baltimore Dr., La Mesa	Vacant lot with some transit use (TPSS)	Current Negotiations	3.2	CM-D Light Industrial and Commercial Services	MTS will not consider sale. Ground lease only. Active Transit Use. Under negotiation for ground lease.
436-610-09, 13, 32	Riverwalk	N Hotel Circle, San Diego	Portion of Golf Course	Opportunity Site	13.7	RMX-2 Mission Valley Community Plan	MTS will not consider sale. Ground lease only. Site will not be available until adjoining community development occurs.

SURPLUS LAND AND JOINT DEVELOPMENT: AB 1486 Impacts

Agenda Item No. C2

June 11, 2020

MTS Executive Committee

MTS Joint Development Program

- Board Policy No. 18 - Revamped in 2019
- Focuses on projects that “create vibrant, transit-oriented communities that offer a range of housing types, job opportunities, and services centered around public transit facilities.” MTS Board Discretion to Choose Type of Project (subject to zoning)
- affordable housing rqmts for residential proposals
- imposes prevailing wage and skilled labor requirements on all joint development projects
- Requires an open and competitive process for selecting joint development partners, and requires a 30-day minimum notice/request for additional proposals upon receipt of any unsolicited offer.

Surplus Land Process

- Surplus Land noticing process not historically applied to MTS
  - Declare land “surplus”, offer to certain parties
  - Competitive bidding process for leases and sale

AB 1486

- AB 1486 changes this as to MTS and other special districts, makes other changes to process for all agencies (including cities and counties)
  - Requires surplus land noticing process for certain ground lease and joint-use projects for first time
    - Includes noticing to entities for uses that MTS would not consider
    - Impacts timeline of MTS joint development process
  - Limits discretion of MTS to choose nature of development at each property, or terms and conditions that can be negotiated by MTS
  - Requires recording of restrictive covenant imposing affordable housing requirements on land sales

AB 1486 Noticing and Mandated Negotiations

- Before entering negotiations to dispose of land by lease or sale, MTS must send a "Notice of Availability" of the property to several entities:
  - *For housing purposes*: to city, county, tribal entities with affordable housing jurisdiction, HCD, and list of housing sponsors provided by HCD
  - *For open space purposes*: to city and county park and recreation departments, regional park authorities, and the State Resources Agency with jurisdiction over the property
  - *For school or school open space purposes*: to the school district in the jurisdiction

AB 1486 Timelines & Penalties

- Up to 8 month process, or longer
- Formal action to declare “surplus land” (est 7-45 days)
- Notice of Availability (require 60 days to respond)
- If Notice of Interest received (requires 90 days to negotiate in good faith)
- Before finalizing any property transaction, must submit to HCD for HCD to determine MTS complied with law (30 days for HCD to respond)
- MTS can respond to HCD finding (60 days to respond)
- If MTS proceeds with transaction despite HCD finding (or without complying with AB 1486), penalty of 30% of transaction value (1st violation) or 50% of transaction value (subs. Violations)

Impacts to MTS Program

- AB 1486 requirements are vague and inconsistent in certain sections
  - Obligations to negotiate for park or school purposes unclear
- Major Conflicts:
  - Requires MTS to accept a project type it does not want on a specific site
  - Unclear that MTS's unsolicited offer process (noticing for 30 days after receipt) meets AB 1486 requirement, even for 100% affordable projects
  - Prioritizes affordability and density over other project features, including developer's ability to perform, prevailing wage, skilled labor and other requirements MTS may choose to impose

Specific Projects at Risk

- E Street Transit Center – joint development with City of Chula Vista
  - RFP process completed early 2020, ready for presentation to City Council/MTS Board
- Baltimore Dr., La Mesa – ground lease negotiations underway after several years of marketing attempts
- Cuyamaca St., Santee – sale negotiations underway with adjacent property owner
- Woodman Ave., San Diego -- sale negotiations underway with adjacent property owner
- Rancho Bernardo Transit Center – unsolicited proposal under staff review; 100% affordable project
- Beyer Blvd Transit Center -- unsolicited proposal under staff review; 100% affordable project

Proposed Action

- Declare all properties on MTS's potential joint development list as "surplus land"
  - June 18 Board Meeting
- Send out Notices of Availability for all properties on surplus land list
  - Starts 60 day period for AB 1486 notice of interest
  - If NOI is received for property currently under negotiation by MTS, a new process would have to be started
    - What happens if the proposal technically meets AB 1486 desired policy goals but is not a project that MTS thinks would best complement transit system or increase transit ridership?
  - Could cause some projects to be delayed, withdrawn, or lose the market

Proposed Action

- *Legislative Action*: seek clarifying or limiting language that preserves MTS autonomy over its joint development program
  - AB 1486 also under review by various city/county working groups

Metropolitan Transit System

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REVISED DRAFT

Agenda

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

9:00 a.m.

Meeting will be held via webinar

To request an agenda in an alternative format or to request accommodations to facilitate meeting participation, please call the Clerk of the Board at least two working days prior to the meeting. Meeting webinar/teleconference instructions can be accessed at the following link: https://www.sdmts.com/about-mts-meetings-and-agendas/board-meetings

		ACTION RECOMMENDED
1.	Roll Call	
2.	Approval of Minutes – May 14, 2020	Approve
3.	Public Comments - Limited to five speakers with three minutes per speaker. Others will be heard after Board Discussion items. If you have a report to present, please give your copies to the Clerk of the Board.	

Please SILENCE electronics during the meeting

CONSENT ITEMS

6. Proposed Fare Enforcement Diversion Program – Pilot Project — Approve
Action would approve the implementation of the Phase 1 Pilot for a new Fare Evasion Diversion Program.

7. Clear Channel Outdoor – Revenue Contract Amendments — Approve
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. B0596.3-13, for Bus Shelter Advertising, and MTS Doc. No. G2014.1-17, for Vehicle Advertising, with Clear Channel Outdoor, Inc. (CCO). For Bus Shelter Advertising, this amendment results in a reduction to the Minimum Annual Guarantee (MAG) paid by CCO from May 1, 2020 to December 31, 2020, and also revises the gross profit share for years 2020 and 2022. For Vehicle Advertising, this amendment results in a reduction to the MAG paid by CCO from May 1, 2020 to December 31, 2020, and also revises the gross profit share for years 2020 and 2022.

8. Microsoft Enterprise Licensing and Software Assurance – Contract Award — Approve
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2378.0-20, with Crayon Software Experts, LLC, for Microsoft Enterprise License and Software Assurance Upgrade and Microsoft Azure estimated overages for three (3) years in the total amount of $878,542.14.

9. Maintenance Support Services for Radio Communications – Contract Award — Approve
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL309.0-20, with Day Management Corp (dba Day Wireless Systems), for Maintenance Support Services For Radio Communications as further described in the scope of work, in the amount of $573,817.68, effective August 1, 2020 for a period of five years.

10. Mid-Coast Trolley Station Network Equipment with Subscription and Service Support – Contract Award — Approve
Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2387.0-20 (in substantially the same format as Attachment A), with Bahfed Corp., for the provision of Network Equipment with Subscription and Service Support for five (5) years in the total amount of ~~$534,230.17~~$989,639.00.

11. Beech Street Double Crossover Project – Design Services During Construction – Work Order Amendment — Approve
Action would: (1) Ratify Work Order Amendment No. 1 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17, with Pacific Railway Enterprises, Inc. (PRE), a Disadvantaged Business Enterprise (DBE), totaling $78,319.56 for additional design services to produce bid-ready contract drawings and technical specifications for the overhead catenary system (OCS) modifications; (2) Ratify Work Order Amendment No. 3 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17, with PRE, totaling $15,562.48 for the addition of civil development to the scope of work; and (3) Authorize the Chief Executive Officer (CEO) to execute Amendment No. 4 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17, with PRE, in the amount of $165,492 for design services during construction.

12. TransTrack Solutions Group Software License Transfer and System Upgrades – Sole Source Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to issue a Purchase Order (PO) with TransTrack Solutions Group for the transfer and purchase of software license and upgrades to existing software services for the duration of 10 years in the amount of $699,602.57.

13. Eighty-Six (86) Motorola APX6000 Radios and Two Base Stations – Sole Source Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G2402.0-20, with Motorola Solutions, Inc. (Motorola), in the amount of $350,956.81, on a sole source basis, for the purchase of 86 APX6000 radios and two base stations.

14. On-Call Job Order Contracting (JOC) Railroad Signals, Overhead Catenary Systems, and Track Work Construction Services – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL312.0-20, with HMS Construction, Inc. (HMS), for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $2,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

15. On-Call Job Order Contracting (JOC) Railroad General Electrical, Communication, and Traffic Signal Construction Services – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL311.0-20, with HMS Construction, Inc. (HMS), for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $5,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

16. Merchant Acquirer Services – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc No. G2338.0-20, with JPMorgan Chase & Co., for the provision of Merchant Acquirer Services for a period of five (5) years with one (1) 5-year option, exercisable at the discretion of the CEO, in the estimated amount of $7,701,958.70.

17. Temporary Staffing Services – Contract Award — Approve

Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. Nos. G2394.0-20, G2395.0-20, G2396.0-20, G2397.0-20, G2398.0-20, and G2399.0-20 with six (6) Temporary Staffing firms (Addeco Government Solutions, AppleOne Employment Services (a Woman and Minority Owned Business Enterprise (WMBE)), Cogent Infotech Corporation, HB Staffing, Phoenix Business Consulting, and PrideStaff Inc. (a Disadvantaged Business Enterprise (DBE))) for the provision of Temporary Staffing Services for a period of five years.

18. Landscape Maintenance – Contract Amendment — Approve

Action would authorize the Chief Executive Officer (CEO) to execute Amendment No. 1 to MTS Doc No. PWG302.0-20, with Aztec Landscaping, Inc. (Aztec), for the provision of landscape maintenance for two additional MTS

properties, for a base period of five years in the amount of $192,206.70, and two optional one-year extensions in the amount of $76,994.55.

19.	San Diego Metropolitan Transit System (MTS) Middletown 9, 11 – Overhead Catenary System (OCS) Construction – Contract Award Action would authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL307.0-20, with HMS Construction Inc. (HMS), for Middletown 9,11 – Overhead Catenary System (OCS) in the amount of $1,009,985.00, plus authorize a 20% contingency fund for construction change orders.	Approve
20.	Semiannual Uniform Report of Disadvantaged Business Enterprise (DBE) Awards and Payments	Informational
21.	Approval of Executive Employment Agreement with Sharon Cooney as Chief Executive Officer Action would approve an Executive Employment Agreement with Sharon Cooney as Chief Executive Officer, in substantially the same format as Attachment A.	Approve

CLOSED SESSION

24.	a. CLOSED SESSION – CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION Pursuant to California Government Code Section 54956.9(d)(1) Teresa Alexander v. San Diego Metropolitan Transit System et al. San Diego Superior Court Case No. 37-2019-24685-CU-PO-CTL	Possible Action
	b. CLOSED SESSION - CONFERENCE WITH LABOR NEGOTIATORS PURSUANT TO CALIFORNIA GOVERNMENT CODE SECTION 54957.6 Agency: San Diego Transit Corporation (“SDTC”) Agency-Designated Representative: Jeff Stumbo, Chief Human Resources Officer Employee Organization: International Brotherhood of Electrical Workers, Local 465 (Representing SDTC Mechanics and Servicers)	Possible Action

NOTICED PUBLIC HEARINGS

25. None.

DISCUSSION ITEMS

30.	Zero Emission Bus Pilot and Transition Plan Update (Mike Wygant & Steve Clermont with Center for Transportation and the Environment) Action would: (1) provide feedback on the draft Zero Emission Bus (ZEB) Transition Plan; and (2) authorize staff to request an extension from the California Air Resources Board (CARB) for submission of the ZEB Rollout Plan.	Possible Action

31.

32.

33.

34.

35.

REPORT ITEMS

45. Annual Security Report (January 1, 2019 through December 31, 2019) (Manny Guaderrama) — Informational

46. Operations Budget Status Report for April 2020 (Gordon Meyer) — Informational

47.

48.

OTHER ITEMS

60. Chair Report — Informational

61. Chief Executive Officer's Report — Informational

62. Board Member Communications — Informational

63. Additional Public Comments Not on the Agenda
If the limit of 5 speakers is exceeded under No. 3 (Public Comments) on this agenda, additional speakers will be taken at this time. If you have a report to present, please furnish a copy to the Clerk of the Board. Subjects of previous hearings or agenda items may not again be addressed under Public Comments.

64. Next Meeting Date: July 30, 2020

65. Adjournment

Metropolitan Transit System

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Agenda Item No. 6

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

PROPOSED FARE ENFORCEMENT DIVERSION PROGRAM – PILOT PROJECT

RECOMMENDATION:

That the Board of Directors approve the implementation of the Phase 1 Pilot for a new Fare Evasion Diversion Program.

Public Security Committee Recommendation

At its meeting on May 14, 2020, the Public Security Committee voted 6 to 0 (Board members Aguirre, Arambula, Galvez, Montgomery, Sandke, and Weber in favor) to recommend that the Board approve the staff recommendation.

Budget Impact

Today's proposal regarding an abbreviated Fare Evasion Diversion Program pilot (Phase 1 Pilot) would be a scaled down version that could be used to measure the popularity of the program and determine what type of software, hardware, or additional staffing may be required to manage participation in the program if it is made permanent. Existing staff would handle most aspects of the program when it is initially launched. Participation in the diversion program could impact the estimated $220,000 in annual citation revenue (fare and non-fare related violations) MTS receives from the San Diego Superior Court, but that would likely be offset by direct payment of the reduced fine to MTS as part of the Diversion Program.

The Phase 1 Pilot would also allow staff to monitor the fare evasion rate and determine if the program is having a negative impact on MTS fare revenue. In general, a 1% increase in fare evasion equates to an annual loss of approximately $971,000 to MTS. Consequently, even small increases in fare evasion can have significant MTS budget impacts.

DISCUSSION:

At its February 27, 2020 meeting, the Public Security Committee instructed staff to provide further information regarding a proposed fare enforcement diversion program. Staff subsequently provided this information at its May 14, 2020 Public Security Committee meeting. Details regarding the pilot are as follows:

Staff proposes implementation of the Phase 1 Pilot to further evaluate the effectiveness, and identify necessary software, hardware, and staffing resources that may be required to effectively manage the program on a permanent basis (Phase 2). The Phase 1 Pilot would use existing staff and resources, except for the development of a Diversion Program web page and online payment platform, which would be completed by an existing MTS vendor. Initially, fine payment can be made by mail or in person at the Transit Store. An online payment system due to its cost and time necessary to implement will be procured if the program is made permanent or utilization warrants the expense.

Key Features of Phase 1 Pilot

Eligibility: All fare violations would be eligible, unless there was another violation (e.g., vandalism, assault, failure to comply) at the time of citation. No graduated offense levels with graduated penalties (e.g., first offense, second offense, etc.) would be included because officers do not have the ability to efficiently check prior citation history when in the field.

Options to Resolve:

1. Pay Reduced Fine within 60 days: $50
   - Pay Online *(later stage implementation if program participation warrants)*
   - Pay In-Person at Transit Store
   - Pay by Mail
2. Complete Community Service within 60 days: 3-4 Hours
   - San Diego Food Bank
   - Other providers may be added pending further review
3. Limited Appeal within 15 days: Proof of Paid Fare or Malfunctioning Ticket Vending Machine
   - If appeal granted, then citation dismissed
   - If appeal denied, option to pay fine or complete community service within original 60-day window
4. No Action Taken within 60 days: Citation transmitted to San Diego Superior Court for adjudication

Implementation Costs and Timeline

The Phase 1 Pilot would be implemented using existing staff in the Security, Marketing, IT, Legal, and Customer Service departments. If participation exceeds the ability for existing employees to absorb these tasks into their workloads, then an additional employee may need to be hired to manage the Fare Evasion Diversion Program. That need would be evaluated during the Phase 1 Pilot period.

Staff estimates that the Phase 1 Pilot could be implemented within approximately 75 days of Board approval to move forward. The Phase 1 Pilot would last for approximately one (1) year.

Staff has confirmed that if any special software and equipment is needed to fully implement and manage the program, it would be a separate system from the overall Next Generation Fare System currently being developed for MTS. Consequently, the implementation of the Fare Evasion Diversion Program is not tied to the new fare system project schedule.

Potential Fiscal Impacts

Annual Fine Revenue May Increase

In general, even though the statutory penalty for fare evasion is $75, MTS often only receives $25 per citation from the Court. Some penalties are further reduced in individual cases. While MTS may only receive $25 or less, the individual defendant is assessed court fees that generally bring the actual cost of the citation to between $177.50 and $382.50. Consequently, a $50 flat rate for the Phase 1 Pilot would both reduce the actual cost of the citation for the individual patron, while potentially increasing the amount of penalty revenue received by MTS.

MTS currently receives approximately $220,000 in penalty revenue each year (includes fare and non-fare citation revenue received from courts and fine revenue received through the existing juvenile diversion program). To the extent this court-generated penalty revenue is reduced because patrons are participating in the Phase 1 Pilot, we would expect overall penalty revenue to increase because MTS would receive more of the penalty revenue per citation through the Diversion Program. This might offset the costs to run the program.

Loss of Fare Revenue

The more significant budget risk related to the proposed Fare Evasion Diversion Program is if the perceived lack of a penalty for not having a valid fare leads to a higher fare evasion rate. Essentially, patrons would conclude that the penalties for not having a valid fare are low enough that it is more cost effective to simply never buy a fare, but to pay the diversion program penalty when and if they get caught. This risk can be partially offset by maintaining frequent fare checking by enforcement officers.

MTS's annual operating budget relies heavily on fare revenue. MTS's Fiscal Year 2020 budgeted fare revenue to support operations is $97,100,000.[1] MTS's current fare evasion rate for the first half of Fiscal Year 2020 is 2.87%, which equates to $2.8 million in revenue loss to MTS caused by fare evasion. If the Fare Evasion Diversion Program causes an increase in fare evasion, then MTS will lose $971,000 for every 1% increase in the fare evasion rate.

[1] This is the pre-COVID-19 budgeted amount for fare revenue. COVID-19 has had a significant impact on MTS fare revenue and ridership. The federal CARES Act package includes funding for transit agencies to cover revenue losses and other costs related to COVID-19. This funding is not available for general revenue losses related to a future, long-term increase in fare evasion. The Fiscal Year 2020 Budget was revised in April 2020 to adjusted revenue estimates based on COVID-19 impacts.

Staff will monitor the fare evasion rate during the Phase 1 Pilot closely to determine if the pilot project is having a negative impact. This is a significant area of concern. MTS's program is modeled after Tri-Met in Portland, Oregon. After implementation of its diversion program, Tri-Met's fare evasion rate increased from 13.1% to a range of 15.8% to 19.1%. This would equate to an *additional* $2.6 million to $5.8 million annual loss for MTS. Tri-Met attributes at least a portion of this increase to a deficit in fare enforcement officers that limited the agency's ability to perform sufficient fare checks during this period.

Locally, North County Transit District (NCTD), which has fare enforcement performed by the San Diego Sheriff's Department on a limited basis, has a 6.9% fare evasion rate on its light rail transit system. This would equate to an *additional* $4 million annual revenue loss for MTS.

In Los Angeles, as LA Metro has converted to a civil-penalty only program and reduced its fare enforcement measures, the LA Metro fare evasion rate has steadily increased. Its fare evasion rate in 2018 was an average of 6.95%. For the first half of Fiscal Year 2020, LA Metro's average fare evasion rate was 18%. This would equate to an *additional* $10.7 million annual revenue loss for MTS. (See Attachment A for agency comparisons.)

Staff recommendation

That the Board of Directors approve the implementation of the Phase 1 Pilot for a new Fare Evasion Diversion Program.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Summary of Other Agency Fare Enforcement Models (Tri-Met, NCTD, LA Metro)

Comparison of Transit Agency Fare Enforcement Programs

	San Diego Metropolitan Transit System (MTS)	North County Transit District (NCTD)	Los Angeles County Metropolitan Transportation Authority (Metro)	Tri-County Metropolitan Transportation District of Oregon (TriMet)
Services Provided	Light Rail, Fixed Route Bus, Paratransit	Commuter Rail, Light Rail, Fixed Route Bus, Paratransit, and Flex	Subway, Commuter Rail, Light Rail, Fixed Route Bus, Paratransit	Light Rail, Fixed Route Bus, Paratransit
Operating Budget	FY20 - $305,100,000	FY20 - $117,445,134	FY20 - $1,844,000,000	FY21 - $730,400,000
Farebox Recovery %	FY20 - 31.8%	FY19 - 16.7%	FY20 - 15.7%	FY19 - 21%
Fare Enforcement Program	Criminal	Criminal	Civil	Hybrid (Part Criminal, Part Civil)
Fare Violation Penalty	MTS Ord. 2: 1st & 2nd offense: Infraction punishable by fine not exceeding $75. 3rd & subsequent offense: Misdemeanor punishable by fine not exceeding $500 or by imprisonment not exceeding 6 months, or by both. Pen. Code 640: 1st & 2nd offense: Infraction punishable by a fine not exceeding $250. 3rd & subsequent offense: Misdemeanor punishable by a fine not exceeding $400 or by imprisonment not exceeding 90 days, or by both. Minors may only be cited under an administrative process. With court fees, fine may be $177.50 or more.	NCTD Ord. 3: 1st & 2nd offense: Infraction punishable by fine not exceeding $75. 3rd & subsequent offense: Misdemeanor punishable by fine not exceeding $500 or by imprisonment not exceeding 6 months, or by both. Pen. Code 640: 1st & 2nd offense: Infraction punishable by a fine not exceeding $250. 3rd & subsequent offense: Misdemeanor punishable by a fine not exceeding $400 or by imprisonment not exceeding 90 days, or by both. Minors may be only be cited under an administrative process. With court fees, fine may be $177.50 or more.	Metro Customer Code of Conduct: 1st offense: $75 fine or diversion program in lieu of $40 fine for Minors or Ejection. 2nd offense: $75 fine or diversion program in lieu of $40 fine for Minors or Ejection. 3rd offense: same as 2nd offense but 30-day exclusion. 4th offense: same as 3rd offense but 60-day exclusion. 5th and subsequent offense: same as 4th offense but exclusion for 90 days.	TriMet Code Ch. 29: Within 90 days, pay fine (1st offense: $75; 2nd offense: $100; 3rd offense: $150; 4th and subsequent offense: $175) to TriMet, participate in community service (1st offense: 4 hours; 2nd offense: 7 hours; 3rd offense: 12 hours; 4th and subsequent offense: 15 hours), or enroll and add money to fare program if eligible (1st offense only). May also appeal within 45 days if can provide proof of valid fare at time of citation. If none of these options are completed within the time prescribed, citation sent to court. If sent to court, fine ranges from $175 to $250.
Fare Enforcement	In practice, if Code Compliance Inspector finds a passenger without a valid fare, passenger is issued criminal citation.	In practice, if Train Attendant or Conductor finds a passenger without a valid fare, passenger is educated on the potential consequences of fare violation. NCTD may dispatch law enforcement personnel (e.g. Sheriff) to issue a criminal fare citation.	In practice, if Fare Inspector finds a passenger without a valid fare, passenger may be issued a warning, ejected, or issued a civil Notice of Violation.	In practice, if Code Compliance Inspector finds a passenger without a valid fare, passenger is issued criminal citation, along with an envelope that explains TriMet's voluntary fare evasion diversion program.
Fare Evasion %	CY 2018 – 2.83% avg CY 2019 – 2.79% avg. July-Dec 2019 – 2.87%	FY19 – 6.9% for Light Rail	CY 2018 – 6.95% avg CY 2019 – 12.6% avg July-Dec 2019 – 18% avg (2019 range of 7.00% -19.28%)	CY 2017 – 13.1% CY 2018 – 15.8% CY 2019 – 19.1%
Future changes	MTS is developing a Pilot Fare Evasion Diversion Program, similar to Tri-Met's fare enforcement model. If cited for fare evasion, passengers may pay reduced fine to MTS, perform community service or appeal if can provide proof of valid fare at time of citation or that ticket vending machine was inoperable. If completed, citation voided. If not completed, citation sent to court.	NCTD is rebuilding its Fare Enforcement program. NCTD is in the process of training Train Attendants and Conductors to issue criminal fare evasion citations, instead of having to dispatch law enforcement. NCTD is interested in MTS's Pilot Fare Evasion Diversion Program and may implement at NCTD.	LA Metro reviewing legislation that would require passengers to show identification and addresses in order to issue a civil Notice of Violation with valid contact information. Also reviewing legislation to assist with collection of administration fines.	Tri-Met is hiring more fare inspectors in order to increase ability to check fares and issue citations as necessary.

Comparison of Transit Agency Fare Enforcement Programs

Metropolitan Transit System

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Agenda Item No. 7

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

CLEAR CHANNEL OUTDOOR – REVENUE CONTRACT AMENDMENTS

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. B0596.3-13 (in substantially the same format as Attachment A), for Bus Shelter Advertising, and MTS Doc. No. G2014.1-17 (in substantially the same format as Attachment B), for Vehicle Advertising, with Clear Channel Outdoor, Inc. (CCO).

For Bus Shelter Advertising, this amendment results in a reduction to the Minimum Annual Guarantee (MAG) paid by CCO from May 1, 2020 to December 31, 2020, and also revises the gross profit share for years 2020 and 2022.

For Vehicle Advertising, this amendment results in a reduction to the MAG paid by CCO from May 1, 2020 to December 31, 2020, and also revises the gross profit share for years 2020 and 2022.

Budget Impact

Both contracts are revenue contracts.

For Bus Shelter Advertising, the MAG is reduced by $320,000 for the 2020 calendar year (from $950,000 to $630,000). The revenue splits above and beyond the MAG have been reduced from 55% to 50% to MTS for the remainder of calendar year 2020. In calendar year 2022, the year in which sales are predicted to normalize, the split will increase to 63% to MTS and in 2023 it will return to 55% and remain so for all other years of the contract.

For Vehicle Advertising, the MAG is reduced by $400,000 for the 2020 calendar year (from $960,000 $560,000). The revenue splits above and beyond the MAG have been

reduced from 66% to 50% to MTS for the remainder of calendar year 2020. In calendar year 2022, the split for MTS increases to 68%. It will return to 66% to MTS for all other years of the contract.

DISCUSSION:

CLEAR CHANNEL OUTDOOR REVENUE HISTORY

CCO has become a valuable partner with MTS, performing its responsibilities on time and with a high level of professionalism. Its responsibilities to maintain bus shelters are rigorous with requirements for cleanings up to three times per week. They handle all emergency cleanings as well. Additionally, the contract required CCO to install all 400 new MTS shelters. CCO also installed 30 digital monitors to increase advertising revenue for MTS.

CCO regularly exceeds its MAG payments to MTS. For bus shelters, the actual payments to MTS have exceeded the MAG by $523,144 over the five complete years of the contract. For vehicle advertising, the payment to MTS exceeded the MAG by 87% with a payment of $1,798,409 in calendar year 2019.

BUS SHELTER ADVERTISING

MTS generates non-fare revenue via advertising on its bus shelters. Under this contract, CCO also has the responsibility for shelter installation, relocation and maintenance. This amendment makes no changes to that obligation.

CCO has been providing bus shelter advertising services since January 1, 2014. The optional term is from January 1, 2019 to December 31, 2023. A second option term is from January 1, 2024 to December 31, 2028.

COVID-19 has had a considerable negative impact on the ability to generate advertising revenues. As a result, both parties have agreed that CCO shall now pay a new, reduced MAG payment of $39,167.00 per month, effective May 1, 2020 through December 31, 2020 as shown in Attachment A.

In summary, the MAG reduction covered under this amendment is shown below:

2020 MAG Payments		
Months	Monthly MAG Amount	Annual MAG
1/1/20 to 4/30/20	$79,167 *(contracted) x 4 mos*	$316,667
5/1/20 to 12/31/20	$39,167 *((amended) x 8 mos*	$313,333
	Total	$630,000

In addition, this amendment will revise the revenue share percentage as follows:

1. Reduce the percentages of gross for the remainder of calendar year 2020 from 55% to 50% to MTS.

2. Increase the percentages of gross for calendar year 2022 from 55% to 63% to MTS.

VEHICLE ADVERTISING

CCO has been providing vehicle advertising services since April 12, 2018. The base term ends September 30, 2023. The option term is from October 1, 2023 to September 30, 2028.

Both parties have agreed that CCO shall now pay a new reduced MAG payment of $30,000 per month, effective May 1, 2020 through December 31, 2020 as shown in Attachment A.

In summary, the MAG reduction covered under this amendment is shown below:

2020 MAG Payments		
Months	Monthly MAG Amount	Annual MAG
1/1/20 to 4/30/20	$80,000 *(contracted) x 4*	$320,000
5/1/20 to 12/31/20	$30,000 *(amended) x 8*	$240,000
	Total	$560,000

In addition, this amendment will revise the revenue share percentage as follows:

1. Reduce the percentages of gross for the remainder of calendar year 2020 from 66% to MTS, to a new split of 50/50% each party.

3. Increase the percentages of gross for calendar year 2022 from 66% to 68% to MTS.

Therefore, staff recommends that the MTS Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. B0596.3-13 (in substantially the same format as Attachment A), for Bus Shelter Advertising, and MTS Doc. No. G2014.1-17 (in substantially the same format as Attachment B), for Vehicle Advertising, with Clear Channel Outdoor, Inc. (CCO).

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft MTS Contract Amendment for B0596.3-13
B. Draft MTS Contract Amendment for G2014.1-17

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

Amendment 3

Effective Date: [DATE] MTS Doc No. B0596.3-13

BUS SHELTER ADVERTISING

Clear Channel Outdoor, LLC
Greg McGrath, President, Southern California Region
19230 Harborgate Way
Torrance, CA 90501

This shall serve as Amendment No.3 to the original agreement B0596.0-13 as further described below.

SCOPE

Contractor has been providing bus shelter advertising services since January 1, 2014. There are no changes to the scope of work.

SCHEDULE

There are no changes to the schedule provision of the agreement.

PAYMENT

Covid-19 has had an impact on advertising services, most recently with the cancellation of Comic-Con 2020. As a result, both parties have agreed that Contractor shall now pay a new reduced Minimum Annual Guarantee (MAG) payment of $39,167.00 per month, effective May 1, 2020 through December 31, 2020. During this time, Contractor shall pay the new reduced monthly MAG amount to MTS as further detailed in Attachment A.

In addition, the percentage revenue share is revised as follows:

1. Reduce the percentages of gross for calendar year 2020 from 55% to MTS, to a new split of 50/50% each party.

2. Increase the percentages of gross for calendar year 2022 from 55% to MTS, to 63% to MTS.

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Greg McGrath, President Southern California Region

Date: _____

Attachment: Revised MAG Payment

Metropolitan Transit System

MTS DOC NO. B0596.3-13

ATTACHMENT A - REVISED MAG PAYMENT

2019 Performance			
Contract Name	Calendar Year	Monthly MAG	Annual MAG
Bus Shelter Advertising	1/1/19 to 12/31/19	$79,167	$950,000

2020 Performance			
Contract Name	Calendar Year	Monthly MAG	Annual MAG
Bus Shelter Advertising	1/1/20 to 4/30/20	$79,167	$316,667
Bus Shelter Advertising	5/1/20 to 12/31/20	$39,167	$313,333
		Total	$630,000

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

Amendment 1

Effective Date: [DATE] MTS Doc No. G2014.1-17

VEHICLE ADVERTISING

Clear Channel Outdoor, LLC
Greg McGrath, President, Southern California Region
19230 Harborgate Way
Torrance, CA 90501

This shall serve as Amendment No.1 to the original agreement G2014.0-17 as further described below.

SCOPE

Contractor has been providing vehicle advertising services on MTS Buses and Trolley Rail Cars since April 12, 2018. There are no changes to the scope of work.

SCHEDULE

There are no changes to the schedule provision of the agreement.

PAYMENT

Covid-19 has had an impact on advertising services, most recently with the cancellation of Comic-Con 2020. As a result, both parties have agreed that Contractor shall now pay a new reduced Minimum Annual Guarantee (MAG) payment of $30,000 per month, effective May 1, 2020 through December 31, 2020. During this time, Contractor shall pay the new reduced monthly MAG amount to MTS as further detailed in Attachment A.

In addition, the percentage revenue share is revised as follows:

1. Reduce the percentages of gross for calendar year 2020 from 66% to MTS, to a new split of 50/50% each party.

2. Increase the percentages of gross for calendar year 2022 from 66% to MTS, to 68% to MTS.

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Greg McGrath, President Southern California Region

Date: _____

Attachment: Revised MAG Payment

MTS DOC NO. G2014.1-17

ATTACHMENT A - REVISED MAG PAYMENT

2019 Performance			
Contract Name	Contract Year	Monthly MAG	Annual MAG
MTS Buses & Trolleys Advertising	10/1/18 to 9/30/19	$80,000	$960,000

2020 Performance			
Contract Name	Calendar Year	Monthly MAG	Annual MAG
MTS Buses & Trolleys Advertising	1/1/20 to 4/30/20	$80,000	$320,000
MTS Buses & Trolleys Advertising	5/1/20 to 12/31/20	$30,000	$240,000
		Total	$560,000

Metropolitan Transit System

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San Diego, CA 92101-7490
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Agenda Item No. 8

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

MICROSOFT ENTERPRISE LICENSING AND SOFTWARE ASSURANCE – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2378.0-20 (in substantially the same format as Attachment A), with Crayon Software Experts, LLC, for Microsoft Enterprise License and Software Assurance Upgrade and Microsoft Azure estimated overages for three (3) years in the total amount of $878,542.14.

Budget Impact

The total cost of the service for three (3) years is $878,542.14 (inclusive of tax). Funding will be from MTS Information Technology operation budget 661010-571250.

Description	Amount
Microsoft Enterprise License and Software Assurance YR1	$280,347.38
Microsoft Enterprise License and Software Assurance YR2	$280,347.38
Microsoft Enterprise License and Software Assurance YR3	$280,347.38
Estimated Microsoft Azure (Overages) Usage YR1	$12,500.00
Estimated Microsoft Azure (Overages) Usage YR2	$12,500.00
Estimated Microsoft Azure (Overages) Usage YR3	$12,500.00
Total:	$878,542.14

DISCUSSION:

MTS currently utilizes Microsoft Volume License Agreement (VLA) to manage all Microsoft software used throughout MTS for desktop, server, and database implementations. This software includes desktop/server operating systems (Windows), E-mail (Exchange), database (SQL), Microsoft Office products, Azure for cloud backups and more. The basis of this agreement is to allow MTS to expand software application deployments to meet MTS demand and provide the mechanism to pay for the Azure cloud storage cost overages annually.

Microsoft Azure is the cloud storage offered under the Microsoft VLA. MTS uses Azure cloud storage as Commvault's offsite repository for backing up agency data and critical systems with extended retention periods as part of our disaster recovery plan. Azure storage costs are based on usage and a monetary commitment has been calculated based on historic usage. Any monetary commitment that is not applied will be forfeited so an amount has been calculated that is slightly lower than forecasted and an estimated budget for overages has been included to cover any amounts over the monetary commitment.

On August 27, 2019, the County of Riverside (County) issued a Request for Quotes (RFQ) for Microsoft software licenses. The County procurement was a formal competitive bid process and developed explicitly for the use of public/governmental agencies to reap the best pricing benefit based on the total volumes of Microsoft software licenses for the numerous agencies that are party to the County of Riverside Microsoft Agreement #8084445. The RFQ was viewed by forty-seven (47) companies, and the County received bids from ten Microsoft Licensing Solution Providers (LSPs). All ten bidders were qualified to provide the licenses on an as-needed basis and pricing for the required license would be requested from the list of qualified providers and awarded to the lowest responsive bidder.

On April 22, 2020, MTS issued a Request for Quote (RFQ) requesting pricing for a three (3) year period for various and estimated quantity of Microsoft Licensing and Software Assurance Upgrade from the ten LSPs that were qualified by the County to provide pricing for Microsoft Enterprise Agreement Licensing. On May 8, 2020, MTS obtained quotes from two LSPs: Zones LLC and Crayon Software Experts LLC.

After the evaluation, Crayon Software Experts, LLC, was found to be the lowest, responsive bidder; based on a comparison between the Independent Cost Estimate (ICE) and the lowest bidder's amount.

Therefore, MTS staff recommends that the Board of Directors authorize the CEO to execute MTS Doc. G2378.0-20, with Crayon Software Experts, LLC, for Microsoft Enterprise License and Software Assurance Upgrade and Microsoft Azure estimated overages for three (3) years in the total amount of $878,542.14.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft MTS Doc. No. G2378.0-20

Metropolitan Transit System

STANDARD SERVICES AGREEMENT
FOR
MICROSOFT ENTERPRISE LICENSING
AND SOFTWARE ASSURANCE

G2378.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Crayon Software Experts, LLC

Address: 8111 LBJ Freeway, Suite 1000
Dallas, TX 75251-1313

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email : sled.us@crayon.com

Telephone: 469.329.0290

Authorized person to sign contracts Ken Pharr (Name) VP of Finance and Operations (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services, as follows:

Microsoft Enterprise Agreement Licensing per MTS' requirements, Crayon's quote dated May 8, 2020 (attached as Exhibit A), the County of Riverside signed Microsoft Agreement 8084445 (attached as Exhibit B) Microsoft Enterprise Enrollment (attached as Exhibit C), and in accordance with the Standard Procurement Agreement, including the Standard Conditions Services (attached as Exhibit D) with signed MTS Forms- Crayon Software Experts, LLC (attached as Exhibit E). If there are inconsistencies between the Contract Documents, the following order of precedence will govern the interpretation of this contract:

1. The terms and conditions of the Microsoft Agreement 8084445, the Microsoft Enterprise Enrollment, and the Microsoft Enterprise Signature form.
2. Standard Procurement Agreement, including the Standard Conditions Procurement.

The term of the contract shall be three (3) base years effective July 1, 2020 through June 30, 2023.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $878,542.14 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	CRAYON SOFTWARE EXPERTS, LLC
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, Office of General Counsel	Title: _____

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
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Agenda Item No. 9

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for
Executive Committee
Review Date: 6/11/2020

SUBJECT:

MAINTENANCE SUPPORT SERVICES FOR RADIO COMMUNICATIONS - CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL309.0-20 (in substantially the same format as Attachment A), with Day Management Corp (dba Day Wireless Systems), for Maintenance Support Services For Radio Communications as further described in the scope of work (Attachment B), in the amount of $573,817.68, effective August 1, 2020 for a period of five years.

Budget Impact

The total value of this agreement will not exceed $573,817.68 and is funded by the operations budgets shown below:

Division	Funding	Amount
San Diego Trolley, Inc. (SDTI)	270016-536500	$562,317.68
San Diego Transit Corp. (SDTC)	902014-536500	$11,500.00
	Overall not-to-exceed contract total	$573,817.68

DISCUSSION:

SDTI operates a 52-mile light rail transit system composed of the UC San Diego Blue Line, the Orange Line and the Sycuan Green Line. Expansion into the Mid-Coast area is in progress at this time, and is expected to be completed during the performance of this contract.

In order to monitor the operations of the rail system and exercise immediate corrective measures during certain on-line failures, SDTI uses a two-way communications network. All Light Rail Vehicles (LRVs) are double-end vehicles, capable of operating in either

direction, and as such carry two mobile radios per vehicle. The two Presidents Conference Committee (PCC) cars are single ended and carry one mobile radio. All 67 non-revenue field maintenance, operations and security vehicles are equipped with one mobile radio. Approximately 525 field personnel are also assigned hand-held radios.

Communications control is managed at the Operations Central Control (OCC) facility located at the SDTI Yard at 12 South 13th Street, where 9 Motorola consoles are installed. Various other communications components and related features (e.g., vehicle silent alarm buttons, radio identification, etc.) are incorporated into the system. Under this contract, Day Wireless Systems will provide maintenance support services for all SDTI equipment for a five-year period.

In addition to providing services for SDTI, SDTC will also require maintenance support services for only the first year of this contract. Currently, SDTC is in the process of upgrading the XT-series Motorola radios on its vehicles to a newer version. These radios were installed in 2003-2005, are no longer supported by Motorola, and are not repairable under the current Motorola maintenance contract. SDTC has a new contract to replace the existing radios and under the upgrade schedule, the radios will not be fully replaced until the end of 2020. As a result, a maintenance contract is required to repair the radios on an as-needed basis until the entire fleet has been upgraded. Day Wireless Systems will provide these services for SDTC during the first year of this contract only.

On February 4, 2020, MTS issued an Invitation for Bids (IFB) for Maintenance Support Services for Radio Communications. MTS staff advertised on the San Diego Daily Transcript and posted the IFB on PlanetBids.

By March 30, 2020, MTS received a single bid from Day Wireless Systems in the amount of $579,817.68. To ascertain that the solicitation was not restrictive, staff conducted a single bid analysis. The analysis results indicated that the firms chose not to bid due to their own business reasons. Therefore, MTS determined that competition was adequate.

On April 9, 2020 MTS requested a Best and Final Offer (BAFO) from Day Wireless Systems. On April 13, 2020, MTS received a BAFO of $573,817.68, a savings to MTS of $6,000 from the initial bid, which staff deemed to be fair and reasonable. Further savings will be realized in early 2021 as Day Wireless Systems is currently working to replace dispatch consoles and associated central electronics. The contract will be amended and maintenance costs reduced due to factory warranty being in place.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL309.0-20, with Day Management Corp (dba Day Wireless Systems), for Maintenance Support Services for Radio Communications as further described in the scope of work, in the amount of $573,817.68, effective August 1, 2020.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft Standard Services Agreement MTS Doc. No. PWL309.0-20
B. Scope of Work
C. Costs

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

PWL309.0-20
CONTRACT NUMBER

STANDARD SERVICES AGREEMENT
FOR
MAINTENANCE SUPPORT SERVICES FOR
RADIO COMMUNICATIONS

THIS AGREEMENT is entered into this ___ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Day Management Corp (dba Day Wireless Systems)

Address: PO Box 22169
Milwaukie, OR 97269-2169

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email: contracts@daywireless.com

Telephone: (503) 659-1240

Authorized person to sign contracts: Vlad Erofeev (Name) Director of Contracting (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to
The Contractor agrees to provide services as specified in the conformed Scope of Work/Technical Specification (Exhibit A), Contractor's Bid Form (Exhibit B), and in accordance with the Standard Agreement, including Standard Conditions (Exhibit C) and Forms (Exhibit D).

The contract effective date is August 1, 2020.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $573,817.68 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	DAY MANAGEMENT CORP (DBA DAY WIRELESS SYSTEMS)
By: _____ Sharon Cooney, Chief Executive Officer	By: _____
	Title: _____
Approved as to form:	
By: _____ Karen Landers, Office of General Counsel	

SECTION 2.0 - TECHNICAL SPECIFICATIONS/ SCOPE OF WORK

2.0 TECHNICAL SPECIFICATIONS

A. General

At present, San Diego Trolley, Inc. (SDTI), which is MTS's Rail division operates a fifty-two (52) mile light rail transit system that extends from Downtown San Diego south to San Ysidro (Blue Line); east to El Cajon via East San Diego and Lemon Grove (Orange Line); and east to Santee via Old Town and Mission Valley (Green Line).

Expansion into the Mid-Coast area including University California, San Diego and University Town Center is in progress at this time, and is expected to be completed during the performance of this contract.

In order to monitor the operations of the rail system and exercise immediate corrective measures during certain on-line failures, a two-way communications network has been implemented since revenue service began on July 26, 1981. All one hundred seventy four (174) Light Rail Vehicles (LRVs) are double-end vehicles, capable of operating in either direction; as such they carry two mobile radios per vehicle. Beginning 2021, up to forty-seven (47) additional Siemens model S700 vehicles may be delivered; approximately the same time older vehicles will be decommissioned. Two (2) Presidents Conference Committee (PCC) cars are single ended and carry only one mobile radio. All sixty-seven (67) non-revenue field maintenance, operations, and security vehicles are equipped with one mobile radio. Approximately five hundred twenty five (525) field personnel are also assigned hand-held radios.

Communications control is managed at the Operations Central Control (OCC) facility located at the SDTI Yard at 12 South 13th Street, where nine (9) Motorola CENTRACOM Gold Elite consoles are installed. Various other communications components and related features e.g., vehicle silent alarm buttons, radio identification, etc. are incorporated into the system.

B. Radio System Description

A diagram of the radio system and off-site component locations is shown. The radio system provides six channels of communications for trolley operations and security use.

Currently, the Mid-Coast Corridor extension is in construction. This extension will bring with it two (2) additional radio channels, with equipment located on Mt. Soledad, as well as a receiver site along the alignment. These will be duplex channels, with the trolley operations channel having its own voting comparator back at OCC, and the security operations channel being interfaced at the voting comparator as a multicast channel, utilizing the same receive channel as channel five, and a separate transmit channel for coverage along the new alignment. This equipment must be considered part of the contract.

All radios are programmed identically and include all six-system channels.

Channels four and six are simplex channels, programmed into portable and mobile units. Channel six is also available to dispatch consoles via a single simplex transceiver at the OCC facility.

Channels one, two, three and five are duplex, repeated systems. Transmitter and field receiver sites for each channel are located to provide communications along a designated operating corridor. Channels one, two, three and five utilize digital T-Carrier wireline circuits to communicate with OCC and with transmitter sites at Mount San Miguel and/or Point Loma (transmit sites are dispatcher selectable). All transmitters are tone controlled. All channels are protected by a Private Line tone. This Private Line sub audible tone prevents trolley receivers from un-squelching on the radio frequency unless the RF carrier includes the Private Line Calls transmitted from mobile or portable radios are at relatively low power level (25-45 Watts) and therefore coverage is not equivalent to that of the transmitter(s). For this reason, the system includes field-voting receivers. In normal operation the mobile or portable signal will be captured by one of the eleven field receivers (Catalina Blvd., Central Control, H Street Chula Vista, Iris Avenue, San Ysidro, Encanto, Old Town, Stadium, Alvarado, El Cajon/Crest or San Miguel). These demodulated signals are transmitted over telephone wire circuits or digital T-carrier wireline circuits to OCC and provide an indication that the field receiver is receiving. A voting comparator for each duplex channel at OCC indicates to the dispatch consoles the un-squelched receivers, the voted receiver, and any failed or disabled receivers.

The “voted” receiver at OCC is processed in two ways. First, it is routed to the dispatcher, and second it is routed to the dispatcher-selected transmitter, thus completing the “repeat’ function.

The radio system also incorporates an underground bi-directional amplifier (BDA) through the SDSU Transit Center station and train tunnels, linked to an above ground antenna for transmissions on all SDTI radio frequencies. SDTI also provides necessary support for the city and county emergency services 800MHz trunked radio system within the SDSU station and tunnel, including its BDA and equipment supplied Cobham, Inc.

C. Wire Services

Telephone wire services provide for various site links for the operation of the communications system. These services include the telephone circuits in the radio system indicated in Attachment B.

The circuits in each part of the system are identified by a circuit identification number. The monthly bill is an operating charge which reflects the specialized line specification and the distance between the terminals.

Line types used by the system are standard “RTNA” or “3002” type dry pairs, and standard “HCQS” B8ZS T-Carrier circuits. Currently, Mt. San Miguel, Point Loma Transmit, and El Cajon/Crest (ECJ) are the only sites utilizing T-Carrier circuits.

D. Dispatch Consoles

The SDTI OCC contains nine (9) workstations, each equipped with a Motorola CENTRACOM Gold Elite radio console. A communications room located on the ground floor under the OCC office contains equipment racks for the radio system along with other

field communication and information technology equipment and serves as the Central Electronics Bank (CEB) for the eight dispatch consoles.

E. Mobile Radios

Sixty-seven (67) SDTI non-revenue vehicles (trucks and automobiles) each have a mobile radio installed, all meeting a 25 to 45 Watts power rating. The primary model is the Motorola CDM1250 and XPR-4500, however SDTI is now purchasing XPR2500 mobile radios going forward.

The same units have been installed in the operating cab of each LRV incorporating a special DC-to-DC converter to reduce operating voltage from 24V to 12V. The LRV units also incorporate an MDC identification signal and a special silent alarm button that activates an emergency notification to OCC.

F. Portable Radios

Most field personnel (approximately 525) are assigned a portable 5-watt handheld radio. The primary models are Motorola PR860 and XPR7350/7350e.

2.1 SCOPE OF SERVICES

A. General

SDTI seeks to engage a qualified service provider to provide radio communications system maintenance and support services. The maintenance support shall be all-inclusive for the radio communication equipment as set forth in this IFB. Contractor shall provide all preventive and corrective maintenance, system diagnostics, programming/reprogramming support, and transfer of listed equipment between old and new LRVs and other non-revenue vehicles. Contractor shall repair all covered equipment on site or provide pickup and delivery services for equipment being repaired off-site. All services shall be provided in compliance with all applicable Federal, State and local regulations and requirements.

Due to the nature of rail transportation, with emphasis on passenger service, SDTI considers its communications system to be of life-safety criticality, on par with the critical nature of public safety radio systems. Contractor will be expected to treat the system as such and prioritize repairs to the system in a manner such that failures are repaired as rapidly, properly and thoroughly as possible.

Within four (4) hours of the initial call for service, Contractor will be expected to send qualified, competent staff out for services related to the system.

B. Preventive Maintenance

Contractor shall provide detailed, thorough preventive maintenance at least once per contract year. This preventive maintenance shall apply to all equipment listed on the bid form. Within two weeks after award of the contract, Contractor shall inspect all existing equipment and prepare a preventive maintenance work plan, and schedule within the subsequent four (4) weeks for SDTI approval. The work plan shall include details of the task to be performed and a checklist. The work schedule shall be closely coordinated with OCC so as not to impact revenue service. SDTI's Project Manager shall have final determination on the schedule phasing and all items related to the schedule. The work

plan and schedule shall be updated and submitted to SDTI for approval yearly for remaining contract years. It is expected that the service provider will prepare a detailed, printed report of all preventive maintenance work completed, including test results and any deficiencies noted. Preventive maintenance will be performed on a per-site basis, rather than a per-channel basis to minimize impacts to the system.

C. Corrective Maintenance

Normal equipment failures shall be covered by this agreement. This includes all labor and parts (except portable radio batteries, microphones and other audio accessories. UPS and battery backup batteries will be considered part of this contract). MTS has UPS battery back up at eight (8) locations. This service shall be provided at any time, as often as required, during the term of the contract without additional charge. Inoperative communications equipment resulting from physical abuse and/or water damage will not be covered by this agreement and will be repaired at a time and material rate at the sole discretion of SDTI. At no time should the Contractor perform any “above contract” work without first obtaining written approval from SDTI. Contractor shall provide detailed service records for each repair incident and it must be attached with the invoice for payment.

D. Portable Radios

Contractor shall be responsible for all repairs to 525 portable radios resulting from normal “wear and tear”. The portable radios requiring repairs shall be picked up, repaired and delivered back to SDTI. They shall be picked up within 24 hours or the next business day between the hours of 8:00 AM and 5:00 PM. SDTI will notify Contractor when there is equipment for pickup. This is considered part of the maintenance and support services and therefore there shall be no trip or fuel charge for regular pickups and deliveries and no minimum quantity for pick up. Portable radios should be repaired and returned to SDTI within five (5) working days.

E. Mobile Radios

Contractor shall respond within twenty-four (24) hours of notification, during normal working hours, for repair of non-revenue vehicle radios, and between 10:00 AM to 2:00 PM Monday through Friday for repair of LRV radios. Contractor shall attempt to repair all mobile radios at SDTI. If a mobile radio needs a shop repair, Contractor may replace it with an SDTI spare radio from the tool room and install on the vehicle while the failed radio is being repaired. Mobile radios should be repaired and returned to SDTI within five (5) working days. Any antenna replacements required shall be covered as part of this contract, with the Contractor bearing the cost of the replacement antenna. Contractor provider shall exclusively use the Laird AB150S NMO-Mount whip antenna, or approved equal on SDTI non-revenue vehicles. No substitutions will be accepted without prior MTS written approval.

F. Dispatch Consoles (9), Transmitters (9), Voting Receivers (32) and associated equipment (Infrastructure)

Contractor shall be responsible for all repairs to dispatch consoles and associated central electronics, transmitters and voting receivers including all associated equipment (voting comparators, combiners, multi-couplers, preamplifiers, crystal filters, filter cavities, RF cabling, antennas, transmission lines, lightning protection units, power inverters, backup batteries, connectors etc.), within the SDTI system. Contractor shall respond to the

affected site within two (2) hours of the initial notification, twenty-four (24) hours a day, 7 days per week, including holidays. Contractor shall carry sufficient parts in their local inventory and provide sufficient personnel for repairs so that no infrastructure equipment remains out of service due to “waiting for parts” issues. Responsibilities shall include all components associated with any UPS or battery back-up system (including batteries) that is exclusive to radio communication equipment.

Personal Computer (PC) hardware including the computer itself, keyboard, mouse and monitor are not the responsibility of the Contractor, and are handled by MTS Information Technology Personnel. However, all software including the dispatch console software itself, any specific drivers, or any interface software is the responsibility of the Contractor. In the event of a PC hardware failure, MTS IT will handle the problem and if necessary, deliver a working PC that meets the requirements of the dispatch console, including the operating system. Beyond that point, the PC software installation, configuration and maintenance becomes the Contractor’s responsibility.

G. Circuit Transport and Backhaul Components

Contractor shall make all repairs on twenty-five (25) circuit transport and backhaul components owned by SDTI. This includes T-Carrier channel banks, ethernet switches, media converters, fiber interfaces, network cards, and associated equipment. It does not apply to telephone company circuits, however Contractor shall maintain a list of telephone company circuits associated with the system, and in the event of a trouble call that is determined to be telephone company responsibility, the Contractor shall notify the telephone service provider of the trouble, and make all arrangements for the repair of the telephone company circuit, and provide all required access and support for telephone company personnel until the problem is resolved. Repairs will be carried out seven (7) days a week, twenty-four (24) hours per day with maximum response time of two (2) hours to the site of the trouble. Contractor shall stock sufficient spare parts in their local inventory for backhaul equipment and provide sufficient personnel for repairs such that no transmit or receive site will remain out of service for over 24 hours. This does not apply to outages resulting from telephone company line trouble, though any repairs deemed to be telephone company responsibility will be independently verified with the telephone service provider. It shall be the responsibility of the Contractor to notify SDTI of any telephone company circuit repairs, and to provide SDTI with the telephone company ticket number for the repair.

H. Battery Chargers

Battery chargers requiring repair shall be picked up and delivered to the user site by Contractor. Repairs will be performed Monday through Friday between hours of 8:00 AM to 5:00 PM. Equipment shall be picked up within 24 hours of notification. Battery chargers should be repaired and returned to SDTI within five (5) working days.

I. Removal and Reinstallation of Mobile Radios

Contractor shall remove all eighty-four (84) mobile radio equipment (including antennas and mounts) from existing SDTI non-revenue vehicles and reinstall on new SDTI non-revenue vehicles on an as needed within forty-eight (48) hours of receiving notice, between hours of 8:00 AM to 5:00 PM, Monday through Friday, at no additional cost to SDTI. Glass mount antennas shall not be re-used, and any vehicle removal involving a glass mount antenna shall have the replacement installation equipped with a Laird AB-

150S NMO-mount whip antenna (or an MTS approved equal) at the Contractor's expense. Under no circumstances shall the Contractor install or re-install glass mount antennas on SDTI vehicles, or change the equipment type without written approval of change.

J. Programming / Reprogramming Radios

Contractor shall program / reprogram radio equipment after performing service and restore the initial features of the repaired radios. Radio repairs requiring reprogramming will include such reprogramming at no extra cost to SDTI. Requests for changes to programmable options (i.e. scan, priority scan, frequency settings, etc.) either as a fleet task or for individual portable or mobile radios shall be performed at least once per year per radio at no additional charge, and shall be performed between hours of 8:00 AM to 5:00 PM, Monday through Friday, within 48 hours of receiving the request.

Contractor will, at no additional cost, and as requested between hours of 8:00 AM to 5:00 PM, Monday through Friday, erase SDTI proprietary programming data from radio equipment deemed surplus to SDTI and return said equipment to SDTI in an unprogrammed state within (5) calendar days of the request for erasure of SDTI data.

Contractor will provide copies of all programming files ("code plugs") for all radios to SDTI upon any programming change. These copies can be provided in CD-ROM format or USB disk and should be provided to SDTI prior to beginning any work and with sufficient time, in the event SDTI wishes to review the files independently before work proceeds.

Contractor will be expected to work with SDTI communications personnel on programming changes, and shall use only SDTI provided or SDTI approved code plugs for reprogramming work.

K. Extra Work

On occasion circumstances require some unanticipated communications system work such as addition of new component, system upgrade or repair, etc. Contractor shall provide its all-inclusive hourly labor rate (inclusive of all related costs except materials) on the Bid Form. MTS is estimating 36 hours per year, but Contractor should note that actual usage may be more or less than estimated. If, and when the need arises, SDTI at its sole discretion will ask the Contractor to perform such work at time and material (materials at cost) using the labor rate quoted in the Bid Form. MTS estimates $4,000 for parts each year, but actual usage may be more or less than estimated.

All such work shall be done as a Work Order for each incident, initiated and with prior approval by MTS in writing. MTS will provide the Contractor with the specifics of the extra work, and Contractor shall submit a quote with hours and materials cost for MTS review of fair and reasonableness. If approved, MTS will notify the Contractor in writing, who will then begin work. This approval must be attached to its related invoice.

San Diego Transit Corporation (SDTC):

In addition to providing services for SDTI shown in the scope of work, MTS also operates SDTC for Bus operations. MTS is adding XTL5000 and XTS1500 Motorola radios used

by SDTC, to be repaired on an as-needed basis, during the first year of the contract, per the Extra Work requirements above. MTS estimates that SDTC repairs, if needed, will not exceed sixty (60) hours and $4,000 in parts.

L. System-Wide Maintenance Management

Contractor shall designate a single point of contact as its Project Manager for managing all SDTI communications system maintenance issues. At a minimum, the contact shall:

i. Serve as the primary point of contact with SDTI on all communications equipment maintenance issues.
ii. Keep SDTI advised as to the operability and functionality of the communications system.
iii. Schedule and perform preventive maintenance on all components of the communications system, as well as provide quality control for other employees of the Contractor that are performing the work.
iv. Maintain chain of custody records on equipment being repaired to ensure that the proper equipment is returned to the customer.
v. Contact appropriate SDTI user/department to coordinate pickup and delivery of equipment.
vi. Coordinate and work with all SDTI management personnel, as well as any SDTI/MTS internal communications specialists, technicians, or other personnel.

Contractor will be expected to provide SDTI with a 24 hour emergency telephone number to serve as a central point of contact for customer service requests, staffed with representatives who will coordinate the appropriate service response and resources, 24 hours a day, 7 days a week, including all holidays. Service requests shall be tracked and monitored from creation to close and reported to SDTI.

M. Safety

Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the services provided. Contractor shall give notice and comply with all applicable laws and regulations of any public body having jurisdiction for the safety of persons or property to protect them from damage, injury or loss, and shall erect and maintain all necessary safeguards for such safety and protection.

Material usage and any disposal shall be accomplished with strict adherence to California Division of Industrial Safety, or other governing regulations, and all manufacturer warning and application instructions listed on the Material Safety Data Sheets and on the product container label shall be adhered to.

Employees of the Contractor shall comply with MTS regulations and California Public Utilities Commission (CPUC) rail safety rules and regulations as contained in CPUC General Order 172 for the duration of this contract. All personnel who may need to work within 15 feet of any main line track at any time outside of the SDTI Yard will be required to complete an SDTI Roadway Worker Protection Plan (RWPP) class. This includes any employees that will be required to enter the SDSU Tunnel for BDA Preventive Maintenance. RWPP classes will be scheduled by Contractor well in advance of the work requiring such training, and paid for at the Contractor's expense (see Roadway Workers Protection Training section).

Contractor's employees working on SDTI property will be expected to wear proper Personal Protective Equipment (PPE) while on SDTI property. At minimum, this shall

consist of an orange *safety vest with reflective striping*, and proper safety work boots. Work requiring additional PPE such as hard hats, safety glasses, gloves, etc. shall be performed using appropriate PPE. Any of Contractor's employees found working on SDTI property without proper PPE will be asked to leave the property until they are able to obtain the proper PPE to complete the work. It shall be the Contractor's responsibility to equip their personnel with proper PPE for work on SDTI property, at its expense. SDTI will not provide or loan PPE to Contractor's personnel.

Contractor will exercise extreme caution while operating their own vehicles in the SDTI yard. Its employees will be expected to be on the constant lookout for train movement within the yard, and to strictly adhere to all stop signs. It is always important for everyone to be vigilant in the yard as train movement can be unpredictable.

Contractor employees are also subject to CPUC rules and regulations pertaining to the use of portable electronic devices while in or on SDTI yards, grounds and stations (http://www.cpuc.ca.gov/). They must be cognizant of cellular phone and Personal Electronic Device (PED) use within the yard and understand that such devices shall only be used within the green outlined "PED/CELL USE ZONE" areas. Employees found violating this policy will be asked to leave the property.

N. Ownership of Equipment

Contractor understands that all equipment under the contract is the property of SDTI. Any failed equipment deemed beyond repair shall be returned to SDTI for dispositioning. Any equipment removed as part of an upgrade, decommissioning, or for any other reason remains the property of SDTI and shall be returned to SDTI within 24 hours of removal.

Other than spare parts required for 24-hour maintenance of the system and equipment that is in for repair or programming, Contractor shall not store SDTI equipment at its facility.

All failed parts and pieces related to repairs performed shall be returned to SDTI along with the repaired equipment for disposal by SDTI.

O. Movement of Vehicles

Contractor shall not operate any SDTI vehicle for any reason and must contact SDTI staff if a vehicle requires movement. This includes all LRVs, PCCs, and non-revenue vehicles. Exceptions may be made as necessary, in writing from MTS, for non-revenue vehicles delivered to Contractor's facility for equipment installation and removal.

2.1 CONTRACTOR QUALIFICATIONS AND EXPERIENCE

The MTS communications system is vital to the agency's operations. As such the Contractor and an proposed subcontractors must be licensed, must be registered with the Department of Industrial Relations and have a minimum of five (5) years of radio communications repair and maintenance services experience in similar size operations. Experience should be shown on the Status of Current and Past Contracts Form attached to this IFB.

2.2 DELIVERY AND ACCEPTANCE

Equipment or any deliverable provided under this contract shall be delivered F.O.B. to SDTI, 1341 Commercial Street, San Diego, California 92113, unless otherwise specified, in first class condition, complete and ready for operation, and the Contractor shall assume all responsibility and risk of loss incident to said delivery.

Contractor shall state delivery on the Bid Form unless already specified, in which case, shall be made within the time set forth. Delivery is part of the consideration and must be adhered to as specified.

Contractor will not be held liable for failure to make delivery because of strikes, construction of property, governmental regulations, acts of God or any other causes beyond his control, provided a written extension of time is obtained from MTS.

Upon delivery, MTS will acknowledge receipt of said items or products. Delivery shall not constitute acceptance. Upon inspection and testing (if necessary) by MTS, a determination will be made whether said items or products are in conformance with contract requirements. If found in conformance, MTS shall immediately approve the Contractor's invoice for payment; thereby constituting acceptance. Payment terms begin from this point. If the delivered items or products are found not in compliance, MTS will immediately notify the Contractor, and furnish all details of deficiencies. Contractor shall correct the deficiencies or supply new items or products (at the discretion of MTS), and resubmit for inspection and testing (if necessary).

2.3 PAYMENT TERMS

Unless otherwise stated in the specifications or bid forms, one hundred (100%) of the contract price for each unit or units of material or equipment furnished and delivered under these specifications, will be paid to the Contractor within thirty (30) days after delivery to and acceptance by MTS of the unit or units ordered, as herein provided, and after the statements covering the unit or units have been presented to MTS by the Contractor.

Cash discounts as shown on the bid form shall be accepted at the option of MTS. Otherwise the terms will be Net thirty (30) from acceptance. Payment terms less than ten (10) days from acceptance will not be considered. ***Advanced Payment is Not Allowable***

2.4 INVOICES

Invoices must be sent to the MTS Accounting Department, via email at ap@sdmts.com. All invoices must have the Purchase Order and contract number clearly displayed to ensure timely payment, and must include detailed service records for each repair incident and any work order approvals. MTS will not pay on packing slips, receiving documents, delivery documents, or other similar documents. Invoices must be submitted for payment.

Contractors must also indicate if any of the invoiced amount is for service or work provided by a subcontractor and indicate the amount that will be paid to the subcontractor. Contractors must also comply with the prompt payment requirements in Section 16 Prompt Progress Payments of the Standard Conditions.

DAYWIRELESS (BEST AND FINAL OFFER) 4/14/20

TABLE 1 - MAINTENANCE SUPPORT & REPAIR SERVICES

CONTRACT YEAR ONE (8/1/20 - 7/31/21)						
#	Description	Qty. (Each)	Unit Price	Monthly Total (Qty x Unit Price)	# of Mths	Ext. Price (Monthly Total x 12)
1	HT1250 Portable Radio	80	$ 6.00	$ 480.00	12	$ 5,760.00
2	PR860 Portable Radio	365	$ 6.00	$ 2,190.00	12	$ 26,280.00
3	XPR7350	40	$ 4.00	$ 160.00	12	$ 1,920.00
4	XPR7350e	40	$ 4.00	$ 160.00	12	$ 1,920.00
5	CDM1250 / XPR2500 Mobile Radio	300	$ 8.00	$ 2,400.00	12	$ 28,800.00
6	XPR4500 Mobile Radio	8	$ 8.00	$ 64.00	12	$ 768.00
7	Multi-Unit Charger	43	$ 5.00	$ 215.00	12	$ 2,580.00
8	Central Electronics Bank	1	$ 90.00	$ 90.00	12	$ 1,080.00
9	Gold Elite Consoles	9	$ 85.00	$ 765.00	12	$ 9,180.00
10	MTR 2000/SLR8000 TX with Coded ID	9	$ 30.00	$ 270.00	12	$ 3,240.00
11	Digitac Comparator	7	$ 25.00	$ 175.00	12	$ 2,100.00
12	MTR 2000/SLR8000 Satellite Receiver	32	$ 30.00	$ 960.00	12	$ 11,520.00
13	MDC Decoder	1	$ 40.00	$ 40.00	12	$ 480.00
14	TELTPCP-1543C Filter	1	$ 40.00	$ 40.00	12	$ 480.00
15	Aerial Facilities Limited BDA Network	1	$ 150.00	$ 150.00	12	$ 1,800.00
					YEAR 1	$ 97,908.00

CONTRACT YEAR TWO (8/1/21 - 7/31/22)						
#	Description	Qty. (Each)	Unit Price	Monthly Total (Qty x Unit Price)	# of Mths	Ext. Price (Monthly Total x 12)
1	HT1250 Portable Radio	80	$ 6.18	$ 494.40	12	$ 5,932.80
2	PR860 Portable Radio	365	$ 6.18	$ 2,255.70	12	$ 27,068.40
3	XPR7350	40	$ 4.12	$ 164.80	12	$ 1,977.60
4	XPR7350e	40	$ 4.12	$ 164.80	12	$ 1,977.60
5	CDM1250 / XPR2500 Mobile Radio	300	$ 8.24	$ 2,472.00	12	$ 29,664.00
6	XPR4500 Mobile Radio	8	$ 8.24	$ 65.92	12	$ 791.04
7	Multi-Unit Charger	43	$ 5.15	$ 221.45	12	$ 2,657.40
8	Central Electronics Bank	1	$ 92.70	$ 92.70	12	$ 1,112.40
9	Gold Elite Consoles	9	$ 87.55	$ 787.95	12	$ 9,455.40
10	MTR 2000/SLR8000 TX with Coded ID	9	$ 30.90	$ 278.10	12	$ 3,337.20
11	Digitac Comparator	7	$ 25.75	$ 180.25	12	$ 2,163.00
12	MTR 2000/SLR8000 Satellite Receiver	32	$ 30.90	$ 988.80	12	$ 11,865.60
13	MDC Decoder	1	$ 41.20	$ 41.20	12	$ 494.40
14	TELTPCP-1543C Filter	1	$ 41.20	$ 41.20	12	$ 494.40
15	Aerial Facilities Limited BDA Network	1	$ 154.50	$ 154.50	12	$ 1,854.00
					YEAR 2	$ 100,845.24

CONTRACT YEAR THREE (8/1/22 - 7/31/23)						
#	Description	Qty. (Each)	Unit Price	Monthly Total (Qty x Unit Price)	# of Mths	Ext. Price (Monthly Total x 12)
1	HT1250 Portable Radio	80	$ 6.37	$ 509.60	12	$ 6,115.20
2	PR860 Portable Radio	365	$ 6.37	$ 2,325.05	12	$ 27,900.60
3	XPR7350	40	$ 4.24	$ 169.60	12	$ 2,035.20
4	XPR7350e	40	$ 4.24	$ 169.60	12	$ 2,035.20
5	CDM1250 / XPR2500 Mobile Radio	300	$ 8.49	$ 2,547.00	12	$ 30,564.00
6	XPR4500 Mobile Radio	8	$ 8.49	$ 67.92	12	$ 815.04
7	Multi-Unit Charger	43	$ 5.30	$ 227.90	12	$ 2,734.80
8	Central Electronics Bank	1	$ 95.48	$ 95.48	12	$ 1,145.76
9	Gold Elite Consoles	9	$ 90.18	$ 811.62	12	$ 9,739.44
10	MTR 2000/SLR8000 TX with Coded ID	9	$ 31.83	$ 286.47	12	$ 3,437.64
11	Digitac Comparator	7	$ 26.52	$ 185.64	12	$ 2,227.68
12	MTR 2000/SLR8000 Satellite Receiver	32	$ 31.83	$ 1,018.56	12	$ 12,222.72
13	MDC Decoder	1	$ 42.44	$ 42.44	12	$ 509.28
14	TELTPCP-1543C Filter	1	$ 42.44	$ 42.44	12	$ 509.28
15	Aerial Facilities Limited BDA Network	1	$ 159.14	$ 159.14	12	$ 1,909.68
					YEAR 3	$ 103,901.52

CONTRACT YEAR FOUR (8/1/23 - 7/31/24)						
#	Description	Qty. (Each)	Unit Price	Monthly Total (Qty x Unit Price)	# of Mths	Ext. Price (Monthly Cost x 12)
1	HT1250 Portable Radio	80	$ 6.56	$ 524.80	12	$ 6,297.60
2	PR860 Portable Radio	365	$ 6.56	$ 2,394.40	12	$ 28,732.80
3	XPR7350	40	$ 4.37	$ 174.80	12	$ 2,097.60
4	XPR7350e	40	$ 4.37	$ 174.80	12	$ 2,097.60
5	CDM1250 / XPR2500 Mobile Radio	300	$ 8.74	$ 2,622.00	12	$ 31,464.00
6	XPR4500 Mobile Radio	8	$ 8.74	$ 69.92	12	$ 839.04
7	Multi-Unit Charger	43	$ 5.46	$ 234.78	12	$ 2,817.36
8	Central Electronics Bank	1	$ 98.35	$ 98.35	12	$ 1,180.20
9	Gold Elite Consoles	9	$ 92.88	$ 835.92	12	$ 10,031.04
10	MTR 2000/SLR8000 TX with Coded ID	9	$ 32.78	$ 295.02	12	$ 3,540.24
11	Digitac Comparator	7	$ 27.32	$ 191.24	12	$ 2,294.88
12	MTR 2000/SLR8000 Satellite Receiver	32	$ 32.78	$ 1,048.96	12	$ 12,587.52
13	MDC Decoder	1	$ 43.71	$ 43.71	12	$ 524.52
14	TELTPCP-1543C Filter	1	$ 43.71	$ 43.71	12	$ 524.52
15	Aerial Facilities Limited BDA Network	1	$ 163.91	$ 163.91	12	$ 1,966.92
					YEAR 4	$ 106,995.84

CONTRACT YEAR FIVE (8/1/24- 7/31/25)						
#	Description	Qty. (Each)	Unit Price	Monthly Total (Qty x Unit Price)	# of Mths	Ext. Price (Monthly Total x 12)
1	HT1250 Portable Radio	80	$ 6.75	$ 540.00	12	$ 6,480.00
2	PR860 Portable Radio	365	$ 6.75	$ 2,463.75	12	$ 29,565.00
3	XPR7350	40	$ 4.50	$ 180.00	12	$ 2,160.00

4	XPR7350e	40	$ 4.50	$ 180.00	12	$ 2,160.00
5	CDM1250 / XPR2500 Mobile Radio	300	$ 9.00	$ 2,700.00	12	$ 32,400.00
6	XPR4500 Mobile Radio	8	$ 9.00	$ 72.00	12	$ 864.00
7	Multi-Unit Charger	43	$ 5.63	$ 242.09	12	$ 2,905.08
8	Central Electronics Bank	1	$ 101.30	$ 101.30	12	$ 1,215.60
9	Gold Elite Consoles	9	$ 95.67	$ 861.03	12	$ 10,332.36
10	MTR 2000/SLR8000 TX with Coded ID	9	$ 33.77	$ 303.93	12	$ 3,647.16
11	Digitac Comparator	7	$ 28.14	$ 196.98	12	$ 2,363.76
12	MTR 2000/SLR8000 Satellite Receiver	32	$ 33.77	$ 1,080.64	12	$ 12,967.68
13	MDC Decoder	1	$ 45.02	$ 45.02	12	$ 540.24
14	TELTPCP-1543C Filter	1	$ 45.02	$ 45.02	12	$ 540.24
15	Aerial Facilities Limited BDA Network	1	$ 168.83	$ 168.83	12	$ 2,025.96
					YEAR 5	$ 110,167.08

TABLE 2 - EXTRA PARTS & WORK

CONTRACT YEAR ONE (8/1/20 - 7/31/21)					
#	**Extra Parts & Work**	**Qty.**	**Unit Price**	**Ext. Price**	
16	SDTI - Extra parts (annual estimated)	1		$	4,000.00
17	SDTI - Extra work hourly billable labor rate	36	125	$	4,500.00
18	*SDTC - Extra parts (annual estimated)	1		$	4,000.00
19	*SDTC - Extra work hourly billable labor rate	60	125	$	7,500.00
			YEAR 1	$	20,000.00
CONTRACT YEAR TWO (8/1/21 - 7/31/22)					
#	**Extra Parts & Work**	**Qty.**	**Unit Price**	**Ext. Price**	
16	Extra parts (annual estimated)	1		$	4,000.00
17	Extra work hourly billable labor rate	36	125	$	4,500.00
			YEAR 2	$	8,500.00
CONTRACT YEAR THREE (8/1/22 - 7/31/23)					
#	**Extra Parts & Work**	**Qty.**	**Unit Price**	**Ext. Price**	
16	Extra parts (annual estimated)	1		$	4,000.00
17	Extra work hourly billable labor rate	36	125	$	4,500.00
			YEAR 3	$	8,500.00
CONTRACT YEAR FOUR (8/1/23 - 7/31/24)					
#	**Extra Parts & Work**	**Qty.**	**Unit Price**	**Ext. Price**	
16	Extra parts (annual estimated)	1		$	4,000.00
17	Extra work hourly billable labor rate	36	125	$	4,500.00
			YEAR 4	$	8,500.00
CONTRACT YEAR FIVE (8/1/24- 7/31/25)					
#	**Extra Parts & Work**	**Qty.**	**Unit Price**	**Ext. Price**	
16	Extra parts (annual estimated)	1		$	4,000.00
17	Extra work hourly billable labor rate	36	125	$	4,500.00
			YEAR 5	$	8,500.00

TABLE 3 - OVERALL TOTALS

CONTRACT YEAR	MAINTENANCE SUPPORT AND REPAIR SERVICES TOTAL (TABLE 1)	EXTRA WORK TOTAL (TABLE 2)	ALL SERVICES COMBINED (ADD A+B)
	(A)	(B)	(C)
CONTRACT YEAR 1 TOTAL:	$ 97,908.00	$ 20,000.00	$ 117,908.00
CONTRACT YEAR 2 TOTAL	$ 100,845.24	$ 8,500.00	$ 109,345.24
CONTRACT YEAR 3 TOTAL:	$ 103,901.52	$ 8,500.00	$ 112,401.52
CONTRACT YEAR 4 TOTAL:	$ 106,995.84	$ 8,500.00	$ 115,495.84
CONTRACT YEAR 5 TOTAL:	$ 110,167.08	$ 8,500.00	$ 118,667.08
OVERALL FIVE (5) YEAR TOTAL (BASIS FOR AWARD)			$ 573,817.68

Bidders are responsible for verifying the calculations above.
Quanties are subject to change, related to projected opening of the Mid-Coast LRT Extension in 2021.
**SDTC services added under Year 1 only, under Addendum No. 1*

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

REVISED

Agenda Item No. 10

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

MID-COAST TROLLEY STATION NETWORK EQUIPMENT WITH SUBSCRIPTION AND SERVICE SUPPORT – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. G2387.0-20 (in substantially the same format as Attachment A), with Bahfed Corp., for the provision of Network Equipment with Subscription and Service Support for five (5) years in the total amount of $989,639.00~~534,230.17~~.

Budget Impact

The value of this agreement will not exceed $989,639.00~~534,230.17~~, including tax. The project will be funded through the MTS Capital Improvement Project (CIP) account 2002010701 (Mid-Coast Communication Network Equipment).

Description	Subtotal
Network Equipment Materials	$~~257,733.84~~667,118.84
License/ Subscriptions (5 Years)	$~~168,198.08~~164,800.52
Support Services (5 Years)	$~~88,323.88~~86,539.64
Sales Tax (7.75%):	$~~19,974.37~~71,180.00
Grand Total:	**$989,639.00~~534,230.17~~**

DISCUSSION:

Freeways and arterials in the Mid-Coast corridor are generally congested, and traffic congestion is projected to increase as the region grows. The Mid-Coast Trolley extension will provide an effective alternative to congested freeways and roadways for

travelers, improve public transit services, and enhance travel options by connecting the corridor with areas served by the existing trolley system.

The Mid-Coast Trolley will extend the UC San Diego Blue Line service from the Santa Fe Depot in Downtown San Diego north to the University City community, serving major activity centers such as Old Town, Mission Bay, the University of California, San Diego (UC San Diego), and Westfield UTC.

The new stations along the Mid-Coast extension require the ability to communicate with the existing network to ensure proper notices reach passengers and trolley operators. To that end, MTS will deploy physical routers, switches, and access points throughout this new MTS arterial. These network devices are MTS core communication components for all different systems and applications such as the Fare system, Trolley monitoring devices, Video Servers, VoIP, and day-to-day user data.

MTS intends to utilize the Federal General Service Administration (GSA) contract schedules to purchase the Cisco network equipment. The GSA solicits and awards contracts for multiple services at a rate that is significantly lower than the national average. The network communication devices and service is one of such items available on the GSA schedule.

On May 4, 2020, MTS issued a Request for Quote (RFQ) for the provision of Cisco Network Equipment with Subscription and Service Support. A single bid was received on the due date of May 27, 2020, from Bahfed Corp. GSA IT Schedule 70 contract reference number GS-35F-0431Y was utilized for this pricing.

The initial bid from the vendor totaled $534,230.17 approximately 50% below the original estimate. This was largely due to a substitution of a Request for Approved Equal (RFA). After staff evaluated the requested substitution and confirmed that our service provider, CISCO, would be unwilling to support the substituted equipment, it was determined that the RFA be rejected and replaced with original CISCO equipment. The replacement components resulted in the significant increase in cost. However, the total cost of the network equipment is still 36% below the original estimate due to the usage of the GSA contract.

After reviewing the single bid submission, Bahfed Corp. was found to be a responsive and responsible bidder. The submitted pricing was determined to be a fair and reasonable price in comparison to the Independent Cost Estimate, and Manufacturer Bill of Material (BOM) price estimate. ~~The quoted price was 32% lower than the estimated price, due largely to the purchasing power of the GSA contract.~~

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. G2387.0-20 (in substantially the same format as Attachment A), with Bahfed Corp., for the provision of Network Equipment with Subscription and Service Support for five (5) years in the total amount of $989,639.00~~534,230.17~~.

/s/Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft MTS Doc. No. G2387.0-20
B. Pricing Sheet

G2387.0-20
CONTRACT NUMBER

STANDARD SERVICES AGREEMENT
FOR
MIDCOAST TROLLEY STATION NETWORK
EQUIPMENT, SUBSCRIPTION AND SERVICES

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Bahfed Corp.

Address: 1000 SW Broadway, Ste 1110
Portland, Oregon 97205

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email : rich.flybahfed.com

Telephone: 949-370-4775

Authorized person to sign contracts Richard Fly (Name) Director, Federal Sales (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services, as follows:

Provision of Network Equipment with Subscription and Service Support as set forth in Scope of Work (attached as Exhibit A), Bid/Pricing Form piggybacked through Federal General Service Administration (GSA) contract IT Schedule 70 ref: GS-35F-0431Y (attached as Exhibit B) and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D) with Signed MTS Forms- Bahfed Corp.(attached as Exhibit E).

The license subscription and support will be for five (5) years.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $939,639.00 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	BAHFED CORP.
By: _____ Sharon Cooney, Chief Executive Officer	By _____
Approved as to form:	
By: _____ Karen Landers, Office of General Counsel	Title: _____

SAN DIEGO METROPOLITAN TRANSIT SYSTEM (MTS) BID FORMS
MID-COAST TROLLEY STATION NETWORK EQUIPMENT
MTS DOC NO. G2387.0-20

GSA or CMAS reference: GS-35F-0431Y (CTA GS-35F-0563U)

TABLE 1: MATERIALS — **REVISED**

Line Item #	Short Text	Quantity Requested	Unit of Measure	Taxable Yes or No	Unit Price	Extended Price	TOTAL DIFFERENCE per actual line item
1	C9300-48P-A	18.00	EA	No	$ 4,888.88	$ 87,999.84	$ 1,814.40
2	PWR-C1-715WAC-P/2	18.00	EA	No	$ 751.00	$ 13,518.00	$ 278.64
3	STACK-T1-50CM	18.00	EA	No	$ 60.08	$ 1,081.44	$ 22.32
4	QSFP-40G-LR4-S	36.00	EA	No	$ 6,894.83	$ 248,213.88	$ (216,591.12)
5	C9300-NM-2Q	18.00	EA	No	$ 1,532.05	$ 27,576.90	$ 568.62
6	C9500-32QC-A	2.00	EA	No	$ 17,964.04	$ 35,928.08	$ 740.78
7	C9K-PWR-650WAC-R/2	2.00	EA	No	$ 1,261.69	$ 2,523.38	$ 52.02
8	QSFP-40G-LR4-S	4.00	EA	No	$ 6,894.83	$ 27,579.32	$ (24,065.68)
9	QSFP-100G-ER4L-S=	4.00	EA	No	$ 45,057.29	$ 180,229.16	$ (173,080.68)
10	C9120AXE-B	36.00	EA	No	$ 708.41	$ 25,502.76	$ 525.96
11	AIR-ANT2544V4M-R=	18.00	EA	No	$ 556.95	$ 10,025.10	$ 206.64
12	AIR-ANT2566P4W-R=	18.00	EA	No	$ 385.61	$ 6,940.98	$ 143.10
					Subtotal:	$ 667,118.84	$ (409,385.00)

TABLE 2: SUPPORT SERVICE

Line Item #	Short Text	Quantity Requested	Unit of Measure	Taxable Yes or No	Unit Price	Extended Price	
13	CON-SSSNT-C93004PA (5Y)	18.00	EA	No	$ 3,060.87	$ 55,095.66	$ 1,135.98
14	CON-SSSNT-C9532ACQ (5Y)	2.00	EA	No	$ 9,766.33	$ 19,532.66	$ 402.74
15	CON-SSSNT-C120AXE9 (5Y)	36.00	EA	No	$ 330.87	$ 11,911.32	$ 245.52
					Subtotal:	$ 86,539.64	$ 1,784.24

TABLE 3: LICENSE/SUBSCRIPTIONS

Line Item #	Short Text	Quantity Requested	Unit of Measure	Taxable Yes or No	Unit Price	Extended Price	
16	D-CISCODNAS-ACT-5Y	36.00	EA	No	$ 432.58	$ 15,572.88	$ 320.76
17	C9500-DNA-P-5Y	2.00	EA	No	$ 12,376.57	$ 24,753.14	$ 510.36
18	C9300-DNA-P-48-5Y	18.00	EA	No	$ 4,367.85	$ 78,621.30	$ 1,621.08
19	AIR-DNA-P-5Y	36.00	EA	No	$ 901.20	$ 32,443.20	$ 668.88
20	CAT-DNA-P-ADD-5Y	18.00	EA	No	$ 745.00	$ 13,410.00	$ 276.48
					Subtotal:	$ 164,800.52	$ 3,397.56

SHIPPING AND HANDLING/ FREIGHT (NO COST):	$ -	
SAN DIEGO, CALIFORNIA SALES TAX (7.75%):	$ 71,180.00	
(BASIS OF AWARD) GRAND TOTAL (All Inclusive of all charges e.g Tax etc.):	$ 989,639.00	$ (475,383.20)

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 11

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for
Executive Committee
Review Date: 6/11/2020

SUBJECT:

BEECH STREET DOUBLE CROSSOVER PROJECT – DESIGN SERVICES DURING CONSTRUCTION – WORK ORDER AMENDMENT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors:

1) Ratify Work Order Amendment No. 1 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (Attachment A), with Pacific Railway Enterprises, Inc. (PRE), a Disadvantaged Business Enterprise (DBE), totaling $78,319.56 for additional design services to produce bid-ready contract drawings and technical specifications for the overhead catenary system (OCS) modifications;

2) Ratify Work Order Amendment No. 3 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (Attachment B), with PRE, totaling $15,562.48 for the addition of civil development to the scope of work; and

3) Authorize the Chief Executive Officer (CEO) to execute Amendment No. 4 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (in substantially the same format as Attachment C), with PRE, in the amount of $165,492 for design services during construction.

Budget Impact

Today's action would bring the total value of the PRE Work Order WOA1953-AE-11 to $419,899.14:

MTS Doc. No.	Purpose	Amount	Board Approval Date
G1953.0-17-AE-30	Original Design Services for Beech Street Double Crossover	$160,525.10	11/8/2018
G1953.0-17-AE-30.1	Added OCS modifications design services	$78,319.56	CEO approval 3/28/19
G1953.0-17-AE-30.2	No cost time extension	$0.00	n/a
G1953.0-17-AE-30.3	Added Civil development design services	$15,562.48	CEO approval 3/10/20
G1953.0-17-AE-30.4	Design Services During Construction	$165,492.00	Today's Proposed Action
	TOTAL	$419,899.14	

PRE Work Order WOA1953-AE-30 is funded through the MTS Capital Improvement Project budget account # 2005107901 - Beech Street Double Crossover (Design).

DISCUSSION:

MTS contracted with PRE to provide design services for the Beech Street Double Crossover Project. The project involved providing design services to upgrade the manual switches to power-operated switches at the existing double crossover between Beech Street and Ash Street, and to extend the Centralized Train Control (CTC) signaling system from Cedar Street to Santa Fe Depot. The improvements will provide greater operational flexibility to accommodate special events, maintenance and unforeseen track outages, and to ensure service reliability.

Under the Work Order, PRE provided the final design documents to obtain competitive bids for construction. The purpose of this work order extension is for continued design team support during construction.

The project is currently moving toward the construction phase and requires assistance from an engineering firm throughout the construction process. PRE will be providing these services, and utilizing a subcontractor, Burns Engineering, Inc. PRE is a certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE) firm. See Attachment B for the dollar amount allocated to the subcontractor.

MTS received pricing for these additional services from PRE, and after a thorough review, determined that the pricing was fair and reasonable.

Therefore staff recommends the MTS Board of Directors authorize the following:

1) Ratify Work Order Amendment No. 1 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (Attachment A), with Pacific Railway Enterprises, Inc. (PRE), a Disadvantaged Business Enterprise (DBE), totaling $78,319.56 for additional design services to produce bid-ready contract drawings and technical specifications for the overhead catenary system (OCS) modifications;

2) Ratify Work Order Amendment No. 3 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (Attachment B), with PRE, totaling $15,562.48 for the addition of civil development to the scope of work; and

3) Authorize the Chief Executive Officer (CEO) to execute Amendment No. 4 to Work Order WOA1953-AE-30 under MTS Doc. No. G1953.0-17 (in substantially the same format as Attachment C), with PRE, in the amount of $165,492 for design services during construction.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Executed Work Order WOA1953-AE-30.01, MTS Doc. No. G1953.0-17
B. Executed Work Order WOA1953-AE-30.03, MTS Doc. No. G1953.0-17
C. Draft Work Order WOA1953-AE-30.04, MTS Doc. No. G1953.0-17

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466

March 22, 2019

MTS Doc. No. G1953.0-17
Work Order No. WOA1953-AE-30.01

Pacific Rail Enterprises, Inc.
Jennifer Purcell
President/CEO
3560 University Ave, Suite F
Riverside, CA 92501

Dear Mrs. Purcell:

Subject: AMENDMENT NO. 1 TO WORK ORDER WOA1953-AE-30, MTS DOC. NO. G1953.0-17, BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING

This letter shall serve as Amendment No. 1 to Work Order WOA1953-AE-30 to MTS Doc. No. G1953.0-17, for professional services under the General Engineering Consultant Agreement, as further described below.

SCOPE OF SERVICES

Work provided under this Work Order will be performed in accordance with the attached Scope of Services (Attachment A) and Negotiated Fee Proposal (Attachment B)

SCHEDULE

There shall be no change to the original schedule.

PAYMENT

This amendment shall add an additional $78,319.56 to the original Work Order. The revised Work Order amount shall not exceed $238,844.56 without prior authorization from MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Paul C. Jablonski
Chief Executive Officer

SAUGUSTYN
G1953.0-17.PRE.032219

Accepted:

Jennifer Purcell
Pacific Rail Enterprises

Date: 4/24/19

Attachments: Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

ATTACHMENT A

SCOPE OF WORK

Scope of Work

Burns will produce bid-ready contract drawings and technical specifications for the OCS modifications required for the support of the upgrades to 149 double crossover, “Beech Interlocking”. The improvements to be considered include the following:

- Upgrade the existing 149 double crossover between Beech St and Ash St.
- Modify the OCS system by adding four section insulators and two interlocked feeder switches for the crossovers.
- Modify the OCS system by adding mainline section insulators and by-pass switches at County Center, 23+84.
- Optional design includes modifying the OCS system by adding two section insulators in the crossovers to sectionalize EB and WB tracks.
- Optional design includes modifying the OCS system by converting existing un-insulated overlaps to insulated overlaps on the EB and WB tracks near County Center/Little Italy Station.

Burns will perform a field survey needed for the engineering design effort along the railroad right-of-way for the project area.

Drawings and Specifications will be developed for the OCS modifications, OCS conductors and hardware, traction power feeder sectionalizing, switches and rail return bonding and grounding. Deliverables will be as directed by the PM and are limited to the following:

- 60% PSE Design. Burns to provide layout drawings showing foundation and pole locations, system sectionalizing diagrams and wiring plans, develop detail drawings for OCS and sectionalizing equipment and provide 60% drawings, specifications and OCS cost estimate. NTP + 4 months

- 90% PSE Design. Burns to update 60% design documents to incorporate customer comments, develop pre-final design drawings including, OCS layout plans, OCS and sectionalizing details and provide 90% drawings, specifications and OCS cost estimate. NTP + 6 months

- 100% PSE Design. Burns to update 90% design documents to incorporate customer comments, develop bid ready design drawings including, OCS layout plans, OCS and sectionalizing details and 100% drawings, specifications and OCS cost estimate. NTP + 8 months

This Work Order will provide final PSE, to complete improvements for the upgrade 149 double crossover between Beech St and Ash St. A follow-on task will be issued for DSDC and IFB support.

Assumptions

1. Burns shall not be responsible for costs associated with MTS flag protection for all on-site activities performed as necessitated by the design process
2. One field survey is included.
3. All review meetings are via teleconference and assumed to last approximately one hour each.
4. Environmental/historical analysis excluded.
5. Structural and foundation analysis and design excluded.

ATTACHMENT B

PRICE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1953.0-17**
Work Order No.	**WOA1953-AE-30.01**
Attachment:	**B**

Work Order Title: **BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1		Labor	$73,519.56
2		ODC	$4,800.00
		Totals =	**$78,319.56**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1		OCS Design	560.0	$73,519.56
2		Travel		$4,800.00
3				
		Totals =		**$78,319.56**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
				Burns Engineering, Inc.	560.0	$78,319.56
				Totals =	**560.0**	**$78,319.56**

Work Order Estimate Summary

Total Hours = **560**

Total Costs = **$73,519.56**

Consultant/Subconsultant: **Burns Engineering, Inc.**

MTS Doc. No.: **G1953.0-17**

Work Order No.: **WOA1953-AE-30.01**

Work Order Title: **BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING**

Attachment: B

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Principal-in-Charge	Principal Engineer Catenary	Sr. Elec Engineer	Project Engineer	Electrical Engineer	Catenary Designer					Total Hours	Totals
				$ 250.78	$ 189.48	$ 166.38	$ 125.39	$ 129.85	$ 98.93						
5	**Task 5**	**OCS Design**													
	60% OCS Design			4	56	32	120	12	160					384	$49,371.96
	90% OCS Design			4	16	16	40	4	40					120	$16,189.08
	100% OCS Design			4	8	8	16	4	16					56	$7,958.52
		Subtotals (Hours) =	N/A	12	80	56	176	20	216					560	$73,519.56
		Subtotals (Costs) =		$3,009.36	$15,158.40	$9,317.28	$22,068.64	$2,597.00	$21,368.88					**560**	**$73,519.56**
	Totals (Summary) =													**560**	**$73,519.56**
	Total (Hours) =		N/A	12	80	56	176	20	216					560	
	Total (Costs) =			$3,009.36	$15,158.40	$9,317.28	$22,068.64	$2,597.00	$21,368.88						$73,519.56
	Percentage of Total (Hours) =		N/A	2%	14%	10%	31%	4%	39%					100%	
	Percentage of Total (Costs) =			4%	21%	13%	30%	4%	29%						100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Burns Engineering, Inc.**

Work Order Title: **BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING**

Contract No: **G1953.0-17**

Task Order No. **WOA1953-AE-30.01**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Repro & Graphics	LS	$0.15										
2	Deliveries	LS	$25.00										
3	Mileage	MI	$0.565										
4	Scanning	LS	$1.00										
5	Other (Photo, etc.)	LS	$1.00										
6	Aerial Photography	LS	$1.00										
7	Travel	Trips	$1,200.00									4	$4,800.00
8													
9													
10													
				Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =	**$4,800.00**

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals	
												Quantity	Total
1	Repro & Graphics												
2	Deliveries												
3	Mileage												
4	Scanning												
5	Other (Photo, etc.)												
6	Aerial Photography												
7	Travel											**4**	**$4,800.00**
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	**$4,800.00**

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466

March 5, 2020

MTS Doc. No. G1953.0-17
Work Order No. WOA1953-AE-30.03

Pacific Rail Enterprises, Inc.
Jennifer Purcell
President/CEO
3560 University Ave, Suite F
Riverside, CA 92501

Dear Mrs. Purcell:

Subject: AMENDMENT NO. 3 TO WORK ORDER WOA1953-AE-30, MTS DOC. NO. G1953.0-17, BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING

This letter shall serve as Amendment No. 3 to Work Order WOA1953-AE-30 to MTS Doc. No. G1953.0-17, for professional services under the General Engineering Consultant Agreement, as further described below.

SCOPE OF SERVICES

The Scope of Work shall be amended to include "Task 5, Civil Development" (Attachment A)

SCHEDULE

This Amendment shall add an additional thirty-one (31) days to the Work Order. The new completion date shall be May 31, 2020.

PAYMENT

This Amendment shall increase the payment amount $15,562.48. The total payment under this Work Order shall not exceed $254,407.14 without prior authorization from MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Paul C. Jablonski FOR
Chief Executive Officer

Accepted:

Jennifer Purcell
Pacific Rail Enterprises
Date: 3/12/20

Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

ATTACHMENT A
SCOPE OF SERVICES

III. SCOPE OF WORK

The scope of work shall consist of the following tasks and deliverables:

Task 5 – Civil Development

Consultant shall perform the Civil design.

- 5.1; 90% Development of pre-final sawcut and conduit design, applicable civil specifications and cost estimate.

- 5.2; 100% Development of final sawcut and conduit design, applicable civil specifications and cost estimate. A bid list for track items will also be provided. Consultant will incorporate comments received by MTS and SANDAG at 90%. Any support needed to address any comments or changes following submission of the 100% PS&E documents, shall require a work order amendment.

IV. PERIOD OF PERFORMANCE

Services performed under this Work Order shall be completed by May 31, 2020

VI. SCHEDULE OF SERVICES/MILESTONES/DELIVERABLES

A. Tasks Schedule

Task	**Begin/End Dates**
Task Order Management	NTP + 10 months
Signal Development	NTP + 10 month
Field Survey	NTP + 2 months
Trackwork Development	NTP + 10 months
Civil Development	NTP + 2 month

B. Milestones/Deliverables Schedule

Milestone/Deliverable	**Due Date**
Field Survey Data	NTP + 1 month
30% Concept	NTP + 3 months
65% Design	NTP + 6 months
100% Design	NTP + 10 months
90% Civil Design	NTP + 1 month
100% Civil Design	NTP + 2 month

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1953.1-17**
Work Order No.	**WOA1953-AE-30.03**
Attachment:	**B**

Work Order Title: **Beech St Double Crossover – Civil Design**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1	0690-0255	Task Order Management	$15,562.48
		Totals =	**$15,562.48**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1		0600-0255 Design Development	68.0	$15,562.48
		Totals =	**68.0**	**$15,562.48**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
x		x		Pacific Raiway Enterprises, Inc.	68.0	$15,562.48
				Totals =	**68.0**	**$15,562.48**

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

June 18, 2020

MTS Doc. No. G1953.0-17
Work Order No. WOA1953-AE-30.04

Pacific Rail Enterprises, Inc.
Jennifer Purcell
President/CEO
3560 University Ave, Suite F
Riverside, CA 92501

Dear Mrs. Purcell:

Subject: AMENDMENT NO. 4 TO WORK ORDER WOA1953-AE-30, MTS DOC. NO. G1953.0-17, BEECH ST DOUBLE CROSSOVER – TRACKWORK AND SIGNALING

This letter shall serve as Amendment No. 4 to Work Order WOA1953-AE-30 to MTS Doc. No. G1953.0-17, for professional services under the General Engineering Consultant Agreement, as further described below.

SCOPE OF SERVICES

The Scope of Work shall be amended to include Design Services During Construction (Attachment A)

SCHEDULE

This Amendment shall add an additional eighteen (18) months to the Work Order. The new completion date shall be November 30, 2021.

PAYMENT

This Amendment shall increase the payment amount $165,492.00. The total payment under this Work Order shall not exceed $419,899.14 without prior authorization from MTS.

Please sign below, and return the document to the Contracts Specialist at MTS. All other terms and conditions shall remain the same and in effect.

Sincerely,

Sharon Cooney
Chief Executive Officer

Accepted:

_____
Jennifer Purcell
Pacific Rail Enterprises

Date: _____

Attachment A, Scope of Services
Attachment B, Negotiated Fee Proposal

ATTACHMENT A
SCOPE OF SERVICES

WORK ORDER TITLE: Bid Support and Design Services During Construction (DSDC) for Beech Street Double Crossover Project

I. PROJECT DESCRIPTION

As a result of the future Mid-Coast Trolley operations plan and the necessity to improve operational flexibility, upgrading the manual switches at the 149 double crossover between Beech Street and Ash Street to power switches and extending the CTC signaling system from Cedar Street to Santa Fe Depot is proposed to provide the improved flexibility. The Beech Street Double Crossovers Project includes new trackwork, special trackwork and associated signaling and OCS improvements.

The project is now entering into the bid and construction phase for which MTS is requesting engineering support services.

Under this Work Order Consultant will provide management and coordination of Design Services During Construction (DSDC), assistance with the permitting process, attendance of construction progress meetings as requested by MTS, review and approve submittals, respond to RFIs, perform field observations as requested by MTS, prepare design revisions/design change notices as needed and assist MTS with construction punchlist and closeout activities.

II. EXPECTED RESULTS

- Conformed plans and specifications following project bid and award
- Design Services During Construction (DSDC) through duration of project construction

III. SCOPE OF WORK

The scope of work to be performed by shall consist of the following tasks including Software Management, Signal, Civil and OCS and deliverables:

TASK 1 PROJECT MANAGEMENT AND COORDINATION

This task involves project management services including the requirements for progress reports, invoicing, meetings, coordination, and oversight of DSDC work and administration of the Consultant's and Subconsultant's work. The labor hours and expenses associated with this task are reflected under the Work Breakdown Structure (WBS) tasks as task management.

1.1 Progress Reports and Invoices

At the end of each month, Consultant shall report on work progress consistent with MTS's reporting and invoicing formats in the form of a progress report with each invoice indicating work completed (WBS subtask) by Consultant and Subconsultant's. Progress will be based on the physical percentage complete of individual subtasks or estimated progress toward completion.

Consultant will submit one copy of a monthly progress report consisting of a written narrative to the MTS PM and MTS Contracts Manager.

1.2 Project Coordination

The Consultant will coordinate meetings and deliverables, and assist the MTS PM on coordination with MTS departments, City of San Diego, CPUC, Contractor, and other governing agencies, for all deliverables to ensure consistency among stakeholders.

TASK 2 BID SUPPORT SERVICES

2.1 Bid Support

Consultant and Subconsultant's will prepare for and attend the pre-bid meeting and respond to RFI's from the construction contractor(s) during the bid process.

2.2 Prepare Conformed Plans and Specifications

Consultant and Subconsultant's will prepare conformed plans and specifications by incorporating any relevant construction contractor RFI's and bid addendum affective during the Bid Phase.

TASK 3 DESIGN SUPPORT DURING CONSTRUCTION (DSDC) SERVICES

3.1 Weekly Construction Meetings

Consultant and Subconsultant's shall attend weekly construction progress meetings at the request of the MTS Project Manager. Appropriate representatives will attend when requested depending on progress and phase of construction. It is assumed that a maximum of two meetings will be attended per month for the duration of construction, excluding pre-construction period required for material procurement. Construction is schedule to be completed within eighteen months of notice to proceed (including procurement period). The consultant shall assume attendance of up to fourteen (14) construction meetings.

3.2 Review & Approve Submittals

Consultant and Subconsultant's will review and approve or take other appropriate action in respect to Contractor-prepared submittals (for those forwarded from the MTS Construction Management (CM) team) required by the specifications, including shop drawings, product catalog cut sheets, certificates of compliance, samples, and other data which the Construction contractor is required to submit, but only for conformance with the information given in the Contract Documents. Such review and approvals or other action will not extend to means, methods, techniques, equipment choice and usage, sequences, schedules, or procedures of construction or to related safety precautions and programs.

Consultant and Subconsultant's will have five working days for review each submittal. Once the review is complete the submittal will receive a notification stamp indicating results of review including notes for additional action by the Construction contractor as may be deemed necessary.

3.3 Respond to Requests for Information (RFI)

The Consultant and Subconsultant's will review and respond to Construction contractor RFIs forwarded from the MTS Construction Management (CM) team and issue necessary clarifications and interpretations of the Contract Documents as appropriate to the orderly completion of the Construction contractor's work. Any orders authorizing variations from the Contract Documents will be made by the MTS CM.

3.4 Field Observations

At the request of MTS, the Consultant and Subconsultant's staff will perform site visits to assist in a response to RFI's, to gather data for developing Change Orders, or to perform other specific tasks such observation of Change in Condition, Construction contractor implementation for substitution, field verifications, pre-testing and in-service testing, etc.

3.5 Prepare Design Revisions/Design Change Notices (DCN's)

Consultant and Subconsultant's will prepare revisions to design plans and technical specifications as directed. Modifications to the project plans and specifications may be required prior to and during the construction phase of the project. The Consultant will work with the MTS construction team to assess the purpose for implementing a potential change, to develop an appropriate solution, and develop corresponding revisions to the plans and specifications. Design revisions may be in response to action required by an RFI, CCO, an unforeseen site condition, value-engineering, etc. If requested by MTS, the Consultant will develop cost estimates to coincide with the proposed changes. Design revisions will be transmitted in PDF file format.

3.6 Punchlist and Closeout Activities

As the project nears Substantial Completion, the Consultant and Subconsultant's will assist the CM team in preparing a punchlist of items to be addressed by the Construction contractor. Assistance with the punchlist will entail site walks as directed by the CM team.

After Completion of Work the Consultant and Subconsultants' shall prepare final as-built plans, based on Record Drawings provided by the Construction contractor. As-built plans prepared under this Work Order will not include any work performed by the Construction contractor subsequent to Completion of Work.

IV. PERIOD OF PERFORMANCE

Notice to Proceed to Project Completion. Construction duration is anticipated to be 18 months to accommodate material procurement lead times.

V. DELIVERABLES

- Bid Documents (Final PS&E). Provide PDF of each document.
- Response to Bidder Comments, as required.
- Conformed Plans & Specifications. Provide PDF of each document.

- Miscellaneous DSDC Phase Deliverables (Submittal responses, RFI's, DCN's, As-Builts, other approvals, etc.).
- As-Builts. Provide PDF and CAD files.

VI. SCHEDULE OF SERVICES/MILESTONES/DELIVERABLES

A. Tasks Schedule

Task	Begin/End Dates
Project Management	NTP/Project Completion
Bid Support	NTP to Bid Protest Period
DSDC	Construction NTP/Project Completion

B. Milestones/Deliverables Schedule

Milestone/Deliverable	Due Date
Conformed Plans and Specifications	Bid Opening/plus 2 weeks
DSDC Deliverables, as needed	As-needed
As-Builts	One month after approved Record Drawings received

VII. MATERIALS TO BE PROVIDED BY MTS AND/OR THE OTHER AGENCY

- Construction contractor Submittals and RFIs
- Construction contractor's Record Drawings

VIII. SPECIAL CONDITIONS/ASSUMPTIONS

1. MTS and Consultant acknowledge and agree that, notwithstanding anything to the contrary in the Agreement between MTS and Consultant, these Special Conditions shall take precedence over any conflicting provisions in the Agreement. However, for the avoidance of doubt, these Special Provisions apply solely to this Work Order and do not otherwise alter the Agreement or other Work Orders.

2. The consultant and subconsultants assume MTS will have hired a construction manager (CM) at the time of construction NTP. In the event a CM is not hired for this project, the consultant and subconsultants will re-evaluate the attached Fee Schedule and submit an amendment to cover additional work normally performed by the CM.

ATTACHMENT B
NEGOTIATED FEE PROPOSAL

Work Order Estimate Summary

MTS Doc. No.	**G1953.0-17**
Work Order No.	**WOA1953-AE-30.04**
Attachment:	**B**

Work Order Title: **Bid Support and Design Services During Contstuction (DSDC) for Beech Double Crossover Project**

Project No:

Table 1 - Cost Codes Summary (Costs & Hours)

Item	Cost Codes	Cost Codes Description	Total Costs
1	0690-0255	Project Management	$15,770.88
2	0600-0255	Bid Support Services	$16,985.76
3	0600-0255	Design Support During Construction (DSDC) Servies	$132,735.36
4			
5			
6			
7			
		Totals =	**$165,492.00**

Table 2 - TASKS/WBS Summary (Costs & Hours)

Item	TASKS/WBS	TASKS/WBS Description	Labor Hrs	Total Costs
1	0690-0255	Project Management	88.0	$15,770.88
2	0600-0255	Bid Support	48.0	$16,985.76
3	0600-0255	Design Support During Construction (DSDC) Servies	830.0	$132,735.36
4				
5				
6				
7				
8				
9				
10				
		Totals =	**966.0**	**$165,492.00**

Table 3 - Consultant/Subconsultant Summary (Costs & Hours)

(If Applicable, Select One)				Consultant	Labor Hrs	Total Costs
DBE	DVBE	SBE	Other			
x		x		Pacific Railway Enterprises, Inc.	750.0	$126,326.88
				BURNS Engineering, Inc.	272.0	$39,165.12
				Totals =	**1,022.0**	**$165,492.00**

Work Order Estimate Summary

Consultant/Subconsultant: **Pacific Railway Enterprises, Inc.**

MTS Doc. No.: **G1953.0-17**

Work Order No.: **WOA1953-AE-30.04**

Total Hours = **750**

Total Costs = **$126,326.88**

Work Order Title: **Bid Support and Design Services During Contstuction (DSDC) for Beech Double Crossover Project**

Attachment: B

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Sr. Systems Engineer	Sr. Railroad Systems Technologist I	Signal Designer III	Sr. Railroad Systems Technologist III	NA	NA	Total Hours	Totals
				$239.76	$133.20	$79.92	$173.16				
1	**Task 1**	**Task Order Management**									
	Project reporting and invoicing			4			40			44	$7,885.44
	Project coordination			4			40			44	$7,885.44
		Subtotals (Hours) =	N/A	8			80			88	$15,770.88
		Subtotals (Costs) =		$1,918.08			$13,852.80			**88**	**$15,770.88**
2	**Task 2**	**Bid Support Services**									
	Bid Support			8			8			16	$3,303.36
	Prepare Confomed Plans and Specifications			12		8	12			32	$5,594.40
		Subtotals (Hours) =	N/A	20		8	20			48	$8,897.76
		Subtotals (Costs) =		$4,795.20		$639.36	$3,463.20			**48**	**$8,897.76**
3	**Task 3**	**Design Support During Constuction (DSDC) Services**									
	Weekly Constuction Meetings (assume 10 @ 2 hrs/mtg)			20			20			40	$8,258.40
	Review and Approve Submittals			24	36		40			100	$17,475.84
	Respond to Requests for Information (RFI)			24	30		40			94	$16,676.64
	Field Observations			24	80		40			144	$23,336.64
	Prepare Design Revisions/Design Change Notices (DCN's)			24	24		24			72	$13,106.88
	Punchlist and Closeout Activities			24	40	60	40			164	$22,803.84
		Subtotals (Hours) =	N/A	140	210	60	204			614	$101,658.24
		Subtotals (Costs) =		$33,566.40	$27,972.00	$4,795.20	$35,324.64			**614**	**$101,658.24**
		Totals (Summary) =								**750**	**$126,326.88**
		Total (Hours) =	N/A	168	210	68	304			750	
		Total (Costs) =		$40,279.68	$27,972.00	$5,434.56	$52,640.64				$126,326.88
		Percentage of Total (Hours) =	N/A	22%	28%	9%	41%			100%	
		Percentage of Total (Costs) =		32%	22%	4%	42%				100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Pacific Railway Enterprises, Inc.**

Work Order Title: **Bid Support and Design Services During Contstuction (DSDC) for Beech Double Crossover Project**

Contract No: **G1953.0-17**

Task Order No. **WOA1953-AE-30.04**

Attachment: **B**

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	Task 1		Task 2		Task 3		Task 4		Task 5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
			Subtotal =			Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Totals Quantity	Totals Total
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	

Work Order Estimate Summary

Consultant/Subconsultant: **Burns Engineering, Inc.**

MTS Doc. No.: **G1953.0-17**

Work Order No.: **WOA1953-AE-30.04**

Total Hours = **272**

Total Costs = **$39,165.12**

Work Order Title: **Bid Support and Design Services During Contstuction (DSDC) for Beech Double Crossover Project**

Attachment: B

Item	TASKS/WBS	TASKS/WBS Description	ODCs (See Attachment)	Principal-in-Charge	Principal Engineer Catenary	Sr. Elec Engineer	Project Engineer	Electrical Engineer	Catenary Designer	NA	NA	Total Hours	Totals
				$ 262.96	$ 198.68	$ 174.46	$ 131.48	$ 136.16	$ 103.74				
2	Task 2	Bid Support Services											
		Bid Support			16				16			32	$4,838.72
		Prepare Confomed Plans and Specifications			8				16			24	$3,249.28
		Subtotals (Hours) =	N/A		24				32			56	$8,088.00
		Subtotals (Costs) =			$4,768.32				$3,319.68			**56**	**$8,088.00**
3	Task 3	Design Support During Constuction (DSDC) Services											
		Weekly Constuction Meetings (assume 14 @ 2 hrs/mtg)		2	14	8			28			52	$7,607.84
		Review and Approve Submittals			16				24			40	$5,668.64
		Respond to Requests for Information (RFI)			12				16			28	$4,044.00
		Field Observations			24				24			48	$7,258.08
		Prepare Design Revisions/Design			8				16			24	$3,249.28
		Punchlist and Closeout Activities			8				16			24	$3,249.28
		Subtotals (Hours) =	N/A	2	82	8			124			216	$31,077.12
		Subtotals (Costs) =		$525.92	$16,291.76	$1,395.68			$12,863.76			**216**	**$31,077.12**
		Totals (Summary) =										**272**	**$39,165.12**
		Total (Hours) =	N/A	2	106	8			156			272	
		Total (Costs) =		$525.92	$21,060.08	$1,395.68			$16,183.44				$39,165.12
		Percentage of Total (Hours) =	N/A	1%	39%	3%			57%			100%	
		Percentage of Total (Costs) =		1%	54%	4%			41%				100%

Work Order Estimate Summary

Consultant/ Subconsultant: **Burns Engineering, Inc.**

Work Order Title: **Bid Support and Design Services During Contstuction (DSDC) for Beech Double Crossover Project**

Contract No: **G1953.0-17**

Task Order No. **WOA1953-AE-30.04**

Attachment: B

TASKS/WBS (1-5)

ODC Item	Description	Unit	Unit Cost	1		2		3		4		5	
				Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Repro & Graphics	LS	$1.00										
2	Deliveries	LS	$1.00										
3	Mileage	MI	$0.535										
4	Scanning	LS	$1.00										
5	Other (Photo, etc.)	LS	$1.00										
6	Aerial Photography	LS	$1.00										
7	Travel	Trips	$1,200.00										
8													
9													
10													
				Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =	

TASKS/WBS (6-10)

ODC Item	Description	6		7		8		9		10		Totals	
		Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
1	Repro & Graphics												
2	Deliveries												
3	Mileage												
4	Scanning												
5	Other (Photo, etc.)												
6	Aerial Photography												
7	Travel												
8													
9													
10													
		Subtotal =		Subtotal =		Subtotal =		Subtotal =		Subtotal =		**Totals =**	

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 12

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for
Executive Committee
Review Date: 6/11/2020

SUBJECT:

TRANSTRACK SOLUTIONS GROUP SOFTWARE LICENSE TRANSFER AND SYSTEM UPGRADES – SOLE SOURCE CONTACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to issue a Purchase Order (PO) with TransTrack Solutions Group for the transfer and purchase of software license and upgrades to existing software services for the duration of 10 years in the amount of $699,602.57.

Budget Impact

The total cost of this agreement shall not exceed $699,602.57. Funding for this project will come from Information Technology (IT) operations account #661010-571250.

DISCUSSION:

TransTrack is a customizable web-based business analytics and data management system designed specifically for public transit providers. MTS has used TransTrack for almost 18 years, through a license agreement between TransTrack and our contracted service provider (currently Transdev), to help manage and fulfill local, state and federal data reporting requirements, as well as, contract oversight for our fixed route, paratransit and minibus service providers.

Since 2002, MTS has contractually required that the fixed route service provider furnish a data management system. With customizable data reporting modules that have been developed for specific MTS functions, the ability of the system to have multiple end-users' access to this system through its web base interface and the relative cost effectiveness, the fixed route service provider has continued to use TransTrack to fulfill this contract obligation. In 2011, First Transit, MTS's paratransit and minibus provider,

was required to start using TransTrack. However, because the license agreement was not between MTS and TransTrack, First Transit has been required to be added onto the existing license maintained by Transdev.

The proposal includes upgrades to the current license, a streamlined standby usage analytic module, an integrated consolidated statistics module, improved maintenance tracking, and enhanced accident and safety performance monitoring capabilities. With these improvements, staff will be able to more effectively monitor and track contractor performance, which ultimately helps contract managers optimize and improve service delivery through MTS contractors.

The current Transdev contract concludes at the end of June 2021 and staff is requesting a sole source award to transfer the TransTrack license to MTS, ensuring MTS continues direct oversight and control over the application rather than continue to require future fixed route contractors to carry the license. This will guarantee that MTS controls and maintains over 18 years of historical data sets, including MTS's customized data reporting modules and all future data currently residing on the TransTrack platform. It also eliminates the need for contracted service providers from potentially transferring TransTrack licenses between competing fixed route providers, in the event the contractor is not renewed or awarded. It also eliminates the need for the paratransit and minibus contractors from being included on the MTS fixed route service provider's (Transdev) license.

An analysis of the pricing was completed and it was found to be within range of the Independent Cost Estimate (ICE) for the project. Costs were compared with OmniTran's (San Bernardino) and Transdev's past contract terms with TransTrack. Based on this analysis, staff determined that TransTrack's costs are fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to issue a Purchase Order (PO) with TransTrack Solutions Group for the transfer and purchase of software license and upgrades to existing software services for the duration of 10 years in the amount of $699,602.57.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. TransTrack End-User Software License Support Agreement

END-USER SOFTWARE LICENSE, TRAINING AND IMPLEMENTATION SUPPORT AGREEMENT

PARTIES:	TRANSTRACK SYSTEMS® Inc. 5265 Rockwell Drive, NE Cedar Rapids, IA 52402 ("Licensor")
	SAN DIEGO METROPOLITAN TRANSIT SYSTEM 1255 Imperial Ave, Suite 1000 San Diego, CA 92101 ("Licensee")
DATE:	July 1, 2020
PLACE:	San Diego, CA

RECITALS

A. Licensor is in the business of developing and licensing the web-based TransTrack Manager® application, available on-line to transit agencies for transit industry Business Intelligence data collection, processing and reporting; and

B. Licensee desires to implement a Data Management System; and

C. Licensee desires to obtain a license for the TransTrack Manager® software application, available online, and services and training support for the software, as well as development of custom imports and reports.

NOW, THEREFORE, the parties agree as follows:

ARTICLE I. GRANT OF LICENSE

1. Grant of License. Subject to all the terms and conditions of this Agreement ("License"), and in consideration of the covenants and representations set forth herein, Licensor grants to Licensee a personal, non-exclusive, non-transferable right and license to the TransTrack Manager® application, with no right to sublicense. The TransTrack Manager® application is described in detail in Exhibit A attached hereto and incorporated by reference ("Software"). The License is granted solely under the conditions contained herein, and Licensee accepts such grant. The term of the License is set forth in Article IV, Section 6 below.

This License and the use of the Software may not be assigned by the Licensee, without the prior written consent of the Licensor. The License, the Software, and user documentation and training materials may not be disclosed, sublicensed, published, released or transferred to another party by Licensee without the prior written consent of Licensor, or except as provided in this License, or by reason of law required of Licensee by State regulations.

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3. Domain. Licensee agrees to access the Software through the Internet at the web address: www.transtrack.net. Access to this domain ("Domain") will be through a special pass code given to Licensee, which is personal to it and is granted through this License Agreement.

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5. Documentation. Licensor shall supply complete Documentation necessary for Licensee to use the Software effectively. Documentation includes, but is not limited to, user manuals and file descriptions. Licensee shall have the right, as part of the License granted herein, to make as many additional copies of the Documentation for its own use as it may reasonably determine it needs.

ARTICLE II. TRAINING, IMPLEMENTATION AND SUPPORT SERVICES

1. Set-Up and Training Services. In connection with the grant of the License, Licensor shall provide Licensee with certain initial user training, implementation and initial set-up services so that the Software will

conform to the organizational needs and business logic requirements of the Licensee. These services are set forth in the Implementation Set-Up and Training Services described in Exhibit "B" attached hereto and incorporated by reference.

With respect to the Set-Up and Training Services, the Customization and Programming Services, and the Support Services which are set forth in Sections 1, 2, and 3 of this Article II, Licensor warrants that all such Services, which are more fully described in Exhibits B, C, and D of this License, shall be performed in a skillful and competent manner which meets or exceeds the industry standards for experienced consultants providing similar services to those provided hereunder. Licensor represents that its employees have all qualifications and approvals of whatever nature that are required to perform such Services.

2. Customization and Programming Services. Under this License, there may be some customization of Licensor's proprietary Software ("Customized Software"). The fees for the Customized Software are already included in the prices set forth in the Exhibits to this License. Should Licensee ask for additional custom features beyond the scope of what has been agreed upon by the Parties for functionality or "look and feel", Licensee shall make requests for such customization and Licensor will determine if it is able to perform such additional services and the fees that will be associated with those additional services. Aside from any intellectual property belonging to Licensee which is subsequently utilized in any customization, notwithstanding any regulatory requirements, including, but not limited to, FTA terms, all Customized Software is licensed in accordance with the terms of this Agreement and Licensor shall retain all right, title and interest in any elements of the Customized Software, its existing Software that are incorporated into any customized product, including but not limited to, rights to patents, copyrights, trademarks, trade secrets, transferable technical data, know-how, source code, processes, future improvements, plans, drawings, specifications, and methods of manufacture incorporated in and to any Customized Software and programming services outlined in Exhibit "C" attached hereto and incorporated by reference. Subject to the rights of termination by Licensor, as specified in this License, any Customized Software shall be available to Licensee for Licensee's use during the one (1) year initial term and any additional renewal terms of the License, provided that Licensee and Licensor can agree on the scope of the Services to be provided and the then current rate for the annual maintenance and support fee for use of the Software.

3. Maintenance and Support Services. Licensor shall provide Internet Service Provider (ISP) and on-going technical assistance, training and

back-up support services to the Licensee as described in Exhibit "D" attached hereto and incorporated by reference.

4. Reports. Licensor shall provide Licensee with the reports containing the information at the times and in accordance with the list provided in Exhibit "E" attached hereto and incorporated by reference. Licensor will prepare and deliver to Licensee such other reports in such formats and at such times as are reasonably requested by Licensee, provided that Licensee agrees to pay the related reasonable incremental costs incurred by Licensor for preparing these other reports, which costs shall be estimated by Licensor at Licensee's request. Licensee will review all reports delivered to it for accuracy within 14 days of delivery, as specified in Exhibit E, and will notify Licensor of any material errors, defined as errors, omissions or discrepancies discovered in any report referenced in Exhibit E. In the event of any material error in a custom report requested by Licensee, Licensor will use commercially reasonable efforts to correct the material error. In the event Licensor is unable to do so, after a reasonable period of time and in its sole discretion, it will return any fees already paid by Licensee for the customization and will not require payment of any fees related to correction of the error if already presented to Licensee in the form of an invoice. Notwithstanding anything contained herein with respect to damages, remedies and liability, THE RETURN OF FEES OR THE FORBEARANCE TO COLLECT ANY FEES RELATED TO ERROR CORRECTION IN CUSTOM REPORTS WILL BE THE SOLE AND EXCLUSIVE REMEDY OF LICENSEE FOR THE INABILITY OF LICENSOR TO CORRECT ERRORS.

ARTICLE III. FEES AND LICENSEE RESPONSIBILITIES

1. Payment of Fees and Costs. Licensee agrees to pay Licensor licensing and service fees as described in Exhibit "F", attached hereto and incorporated by reference. These licensing and service fees are for the License described in Article I, and training, set-up services, customized programming services, ISP and on-going support services described in Article II. All amounts due from Licensee shall be paid in accordance with the schedule referenced in Exhibit "F." Upon receipt of an invoice from Licensor, Licensee shall, within thirty (30) days, review the invoice and pay all approved charges for services that have been provided to Licensee and accepted for use on a time and materials basis.

2. Default by Licensee in Payment of Fees. Should Licensee either fail to make the payments set forth in Exhibit "F" within 30 days from the date of invoice to Licensee or dispute any charges on such statement, the Licensor shall send a written notice of delinquency in the manner set forth in Article IV, Section 8(K). If payment for undisputed charges has

not been received after ten (10) days from the date of the written notice to Licensee specifying the delinquency, Licensor shall have the right to terminate this License and all rights granted herein and seek damages and injunctive relief for the breach thereof.

3. Responsibilities of the Licensee. Licensee agrees to name a Project Manager/System Administrator with responsibility for taking reasonable action to ensure a timely implementation set-up and training by Licensor of Licensee's staff. Licensee is responsible for assigning security access to the Software and data of the Licensee. Licensee understands that satisfactory performance of the Software requires, at a minimum: A 17-inch monitor, Microsoft Internet Explorer 8 or higher, 128MB RAM, and Pentium 120MHz processing speed. Licensee is responsible for providing the hardware and appropriate software and operating systems specified herein.

4. No Other Terms. Except as explicitly provided in this License, no other terms, conditions, representations, warranties or guarantees, whether written or oral, express or implied, will form a part of this License or have any legal effect whatsoever. Without limiting the generality of the foregoing, Licensor will not be bound by any standard or printed or referenced terms produced by Licensee, including but not limited to those terms included or referenced in any of Licensee's purchase orders. Licensee expressly acknowledges that no provisions, representations, undertakings, agreements, regarding the products or services to be provided hereunder, have been made, other than those contained in this License.

ARTICLE IV. MISCELLANEOUS

1. Confidentiality.

   A. Definition of Confidential Information. The parties acknowledge that in connection with their respective rights and responsibilities under this License, each will have access to the others' confidential and proprietary information ("Confidential Information"). Licensor's Confidential Information includes the Software and all copies and partial copies thereof, including its proprietary function, logic and structure, the Documentation, and any other information of a competitive, sensitive or proprietary nature, such as, but not limited to, any non-public information relating to Licensor's internal procedures, customers, personnel, incidents, financial information and other results. Licensee's Confidential Information includes the Data, as defined in Article I, Section 4 of this License Agreement, and any information of a competitive, sensitive or proprietary

nature, such as, but not limited to, any non-public information relating to Licensee's internal procedures, customers, personnel, incidents, financial information and other results. For purposes hereof, the parties acknowledge and agree that, except as otherwise provided in subsection 1(D) of this Article IV, Licensee's Confidential Information includes any and all methodologies, business logic and technology utilized by Licensee in its business. This obligation of confidentiality applies to any Confidential Information that is proprietary to each Party as well as to information of third parties that either Party has an obligation to keep confidential, and will survive termination of this License. The Parties agree that, upon termination of this License, Licensor shall return to Licensee all copies of Licensee Confidential Information in Licensor's possession.

B. Limitations on Disclosure and Use. Except as specifically provided for in this License or as required by law, each Party agrees not to use the other Party's Confidential Information for itself or for any other party, or divulge or disclose the Confidential Information to any other party other than to authorized employees or consultants with a need to know, each of whom is made aware of and agrees to abide by these obligations. All confidentiality obligations contained in this Article IV shall be in full force and effect as to those entities. Each Party agrees to implement reasonable procedures to prevent unauthorized disclosure and to treat the other Party's Confidential Information with at least the same degree of care as it treats its own Confidential Information, but at a minimum with a reasonable degree of care.

C. Compelled Disclosure. In the event that either Party becomes legally compelled to disclose the other Party's Confidential Information, the compelled Party shall provide the other Party with at least five (5) business days written notice (or, if such notice period is impracticable, prompt notice) so that the other Party may seek a protective order or other appropriate remedy. If the other Party is unable to obtain a protective order or other appropriate remedy, then the receiving Party may disclose the disclosing Party's Confidential Information requested but only that minimum amount of Confidential Information required to comply with the legal request as advised by the receiving Party's legal advisor.

D. Exclusions from Confidential Information. For purposes of this subsection, Confidential Information shall not be deemed to include any information that (i) is or subsequently becomes publicly available other than through either Party's breach of any duty owed

the other Party; (ii) was lawfully known to the receiving Party prior to disclosure in connection with this License; or (iii) became known to the receiving Party from a third party other than by breach of a duty of confidentiality; or (iv) information that is required to be disclosed pursuant to the California Public Records Act.

2. Intellectual Property Warranty and Indemnification. Licensor represents and warrants that Licensor is the owner of the Software and has the right to grant the License granted herein. Licensor will defend and indemnify Licensee against a claim that the Software infringes a United States intellectual proprietary right of a third party provided that: (i) Licensee promptly notifies Licensor in writing upon receipt of the claim or complaint, and does not prejudice the rights of Licensor within the context of any such action or claim; and (ii) Licensee provides Licensor, at Licensor's expense, with assistance, information and authority necessary for Licensor to perform its obligation under this Section 2, (iii) Licensor controls the defense and settlement of any claim or action with legal counsel of Licensor's choice in its sole discretion. If the Software becomes, or in Licensor's reasonable judgment is likely to become, the subject of a claim based upon an alleged infringement of an intellectual property right of a third party, Licensor will notify Licensee and at Licensor's sole option,(i) procure for Licensee the right to continue to use the Software; or (ii) replace or modify the Software so that it is non-infringing; or (iii) require that Licensee, upon advance written notice, cease, with respect to all periods commencing on and after the date of such notice, use of the Software under this License for an indefinite period or, at Licensor's sole discretion, for a period pending satisfaction by Licensor of clause (i) or (ii) immediately above in this Section 2 of Article IV. In the case of this clause (iii), Licensor shall credit the Licensee for fees paid with respect to the Software, calculated on a straight-line depreciation schedule based on the term of this License commencing from the date of Licensee's payment of the License Fees hereunder. Should Licensee be required to cease use of any Customized Software, Licensor shall reimburse Licensee for all customization fees paid by Licensor to Licensee, based on the same depreciation schedule. In addition to the return of the amortized fees already paid to Licensor, Licensor and Licensee shall have the right to terminate this License in its entirety without any obligations thereafter. These remedies, including termination of the License, as well as the indemnification obligations contained herein, shall be the sole and exclusive remedies of Licensee for Licensor's breach of its warranty of non-infringement.

3. Equitable Remedies. Each of the parties acknowledges and agrees that its failure to comply with the terms of Section 2, 3 and 4 of Article I and Section 1 of Article IV will result in immediate and irreparable damage to

the other party. Each of the parties acknowledges and agrees that there is no adequate remedy at law available to the other party for such failure and in the event thereof, the non-breaching party shall be entitled to seek equitable relief in the way of a temporary restraining order, an injunction and such other relief as a court of competent jurisdiction may deem proper, without the necessity of posting a bond or similar security.

4. WARRANTY DISCLAIMER. EXCEPT FOR THE LIMITED WARRANTY WITH RESPECT TO THE SERVICES TO BE PERFORMED IN ACCORDANCE WITH ARTICLE II, SECTION 1 ABOVE, LICENSOR DOES NOT MAKE ANY WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE SOFTWARE, ANY THIRD PARTY SOFTWARE, ANY HARDWARE OR EQUIPMENT, THE SERVICES RENDERED BY ITS PERSONNEL, OR THE RESULTS OBTAINED FROM THE WORK OF ITS PERSONNEL, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY AGAINST INFRINGEMENT THAT MAY BE PROVIDED IN SECTION 2-312 OF THE UNIFORM COMMERCIAL CODE OR ANY COMPARABLE STATE STATUTE. LICENSEE FURTHER UNDERSTANDS AND AGREES THAT IT IS GRANTED THIS LICENSE ON AN "AS IS" "WHERE IS" BASIS. FURTHER, LICENSOR DOES NOT WARRANT THAT: (I) THE SOFTWARE OR ANY CUSTOM SOFTWARE WILL MEET ALL OR ANY OF LICENSEE'S PARTICULAR REQUIREMENTS; (II) THAT THE SOFTWARE OR ANY CUSTOM SOFTWARE WILL OPERATE ERROR FREE OR UNINTERRUPTED; OR (III) ALL PROGRAMMING ERRORS IN THE SOFTWARE OR ANY CUSTOM SOFTWARE CAN BE FOUND OR CORRECTED. THE FOREGOING SHALL CONSTITUTE LICENSEE'S SOLE RIGHT AND REMEDY WITH RESPECT TO WARRANTY UNDER THIS AGREEMENT.

5. LIMITATION OF LIABILITY. IN NO EVENT SHALL LICENSOR BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, PUNITIVE, OR INDIRECT DAMAGES FOR ANY CAUSE WHATSOEVER, INCLUDING BUT NOT LIMITED TO THE BREACH OF THE WARRANTY OF INFRINGEMENT, INCLUDING ANY DAMAGES WHICH MAY BE CONTAINED IN SECTION 2-312 OF THE UCC OR COMPARABLE STATE STATUTE; PERFORMANCE OF ANY SERVICES, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA OR RECORDS, OR LOSS OF BUSINESS INFORMATION, OR FOR ACTS OF NEGLIGENCE THAT ARE NOT INTENTIONAL OR RECKLESS IN NATURE, REGARDLESS OF WHETHER IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. LICENSOR'S AGGREGATE LIABILITY AND RESPONSIBILITY FOR ANY AND ALL CLAIMS, DAMAGES, COSTS OR LOSSES WHATSOEVER ARISING EITHER JOINTLY OR SOLELY FROM OR IN CONNECTION

WITH THIS AGREEMENT OR THE USE (WHETHER OR NOT IN THE MANNER PERMITTED BY THIS AGREEMENT) OF THE SOFTWARE, CUSTOM SOFTWAREOR DOCUMENTATION, INCLUDING CLAIMS FOR BREACH OF CONTRACT, TORT, MISREPRESENTATION, OR OTHERWISE, SHALL IN NO EVENT EXCEED THE AMOUNT OF FEES PAID BY THE LICENSEE IN THE YEAR OF THE CLAIM FOR THE SOFTWARE, CUSTOM SOFTWARE, DOCUMENTATION OR SERVICE THAT IS THE SUBJECT OF THE CLAIM. THIS LIMITATION OF LIABILITY SHALL NOT APPLY FOR ACTUAL DAMAGES RESULTING FROM BODILY INJURY OR TANGIBLE OR REAL PROPERTY DAMAGE RESULTING FROM THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF LICENSOR.

6. Term and Termination. This term of this License shall commence on the date of complete execution by both parties and continue through June 30, 2030. After June 30, 2030, the License may be renewed at the request of Licensee for an additional one (1) year period in exchange for the payment for an extension of the annual maintenance and support service fees set forth in the attached Exhibits. The license right to use the Software are only valid and available for the Licensee use during the original contract term and any fully paid-up annual maintenance and support service renewal periods. Upon prior written notice, either party may terminate this License if the other party becomes insolvent, ceases doing business in its regular course, files a petition in bankruptcy or is subject to the filing of an involuntary petition for bankruptcy which is not rescinded within a period of ninety (90) days, or fails to cure a material breach of any term or condition of this License within thirty (30) days of receipt of written notice specifying such breach and demand for cure. Notwithstanding the foregoing, however, failure by Licensee to timely pay undisputed or disputed fees under this License shall be subject to shorter termination periods as specified in Article III, Sections 1 and 2 above.

7. Insurance and Escrow Agent

   A. Escrow. After execution of this License, and subject to payment of the appropriate fees by Licensee (set forth in Exhibit F), Licensor will deposit and maintain with an escrow agent the source code for the Software and related documentation ("Escrowed Materials"), pursuant to an agreement for escrow services with an Intellectual Property Escrow Agent ("Escrow Agent"). Licensee shall be named a beneficiary under the agreement with the Escrow Agent. It shall be the responsibility of Licensee to procure third-party software in order to use the Escrowed Materials. The events which would allow Licensee to receive the Escrowed Materials from the Escrow Agent shall be: (i) the bankruptcy or dissolution of Licensor; (ii) a

court order requiring the Escrow Agent to release the Escrowed Materials; or (iii) a request of Licensor. In the event of a release to Licensee of the Escrowed Materials, Licensee shall be granted a royalty free license to access, use, digitally perform and execute the Escrowed Materials in furtherance of the purpose of this License.

B. Insurance. Licensor will obtain and maintain during the Term: (i) Commercial General Liability Insurance, including products, completed operations liability and personal injury, advertising liability and contractual liability with a minimum combined single limit of $1,000,000 per occurrence; (ii) Commercial Automobile Liability Insurance with a minimum combined single limit of $1,000,000 per occurrence for bodily injury and property damage; and (iii) Errors and Omissions Insurance with a limit of liability not less than $1,000,000. Licensor will also provide a program of Workers' Compensation insurance or a State-approved Self-Insurance Program in an amount and form to meet all applicable requirements of the Labor Code for applicable state of employee residence, including Employer's Liability, covering all persons providing services on behalf of the Licensor and all risks to such persons under this License.

8. General.

A. Relationship of the Parties. In performing their respective obligations hereunder, each of the parties shall operate as and have the status of an independent contractor and shall not act as or be an agent, partner, or employee of the other party. Neither party shall have any right or authority to assume or create obligations of any kind or to make any representations or warranties on behalf of the other party, whether express or implied, or to bind the other party in any respect whatsoever.

B. Force Majeure. Neither party shall be deemed in default of this License to the extent that performance of the party's respective obligations or attempts to cure any breach are delayed or prevented by reason of any act of God, fire, natural disaster, act of government, or any other cause beyond the reasonable control of such party, provided that such party gives the other party written notice of the condition within ten (10) business days of discovery thereof. If proper notice is given, the time for performance or cure shall be extended for a period equal to the duration of the force majeure event or circumstance described in the notice.

C. Assignment and Binding Effect. Licensee may not assign, bargain, sell, transfer, sublicense, convey, hypothecate or pledge the rights and licenses granted to it herein without the prior written consent of Licensor. Licensor may, with notice to Licensee, assign this License either in its entirety or in partial form to a successor in interest by way of merger, acquisition, spin-off, or consolidation, or to an entity with which it enters into an outsourcing agreement with respect to the maintenance and support obligations for the Software. This License shall be binding upon and inure to the benefit of any permitted successors or assigns.

D. Sole License. This License, including the recitals and the attached exhibits and any other attachment incorporated herein by reference, sets forth the entire License and understanding of the parties relating to its subject matter, and supersedes and merges all prior and contemporaneous agreements, negotiations and understandings between the parties, whether oral or written. Neither Licensee nor Licensor shall be bound by any oral agreement or representation irrespective of by whom or when made. No change or modification to this License will be binding unless it is in writing and signed by authorized representatives of Licensor and Licensee.

E. Legal Costs and Expenses. If any action or proceeding, including non-binding mediation, is brought to enforce any of the terms of this License, the prevailing party shall be entitled to recover all of its reasonable costs and expenses incurred in such proceeding, including but not limited to, reasonable attorney's fees.

F. Severability. In the event that any provision of this License is determined by a court of competent jurisdiction to be illegal, invalid, or otherwise unenforceable under applicable laws or regulations, either such provision shall be deemed amended to conform to such laws or regulations without materially altering the intention of the parties, or it shall be deleted and the parties shall negotiate in good faith to replace such provision. In such event, the remainder of this License shall continue in full force and effect unless, after the provisions deemed to be illegal, invalid or unenforceable are removed, the remainder of the License's terms make it commercially impracticable to continue in the opinion of either Party. In such event, the License will terminate without any liability on the part of either Licensee or Licensor.

G. Waiver. The waiver of any right or default hereunder shall be effective only in the instance given and shall not operate as or

imply a waiver of any similar right or default on any other occasion. Either party may elect to continue performance notwithstanding such breach by the other party, but such performance shall not constitute a waiver of such breach nor otherwise limit the non-breaching party's remedies. No waiver of any provision of this License shall be effective unless in writing and signed by the party against whom it is sought to be enforced.

H. Authority. Licensor and Licensee warrant and represent that they are free to enter into and fully perform this License, that all required authorizations have been procured prior to execution of this License, and that the parties designated as signatories of Licensor and Licensee each have the requisite authority to do so.

I. Alternative Dispute Resolution. Prior to commencement of any civil legal proceedings, specifically excluding injunctive relief authorized hereunder, to enforce the obligations of a party under the terms of this License, a party must submit the controversy or claim for mediation to an independent mediator selected by the Judicial Arbitration and Mediation Services, Inc. ("JAMS"). All proceedings shall be administered by JAMS in accordance with their then current rules. If there is any inconsistency between the terms of this License and any such JAMS rule, the terms and procedures set forth herein shall control. Venue of the mediation shall be Los Angeles County, California. All statutes of limitation applicable to any claim or dispute hereunder shall apply to any mediation proceeding. All discovery activities shall be expressly limited to matters directly relevant to the dispute or claim being mediated. No provision hereof shall limit the right of any party to obtain provisional or ancillary remedies, including without limitation, injunctive relief, attachment, or the appointment of a receiver, from a court of competent jurisdiction before, after or during the pendency of any mediation. Mediators must be active members of the California State Bar or retired judges of the state or federal judiciary of California, with expertise in the substantive laws applicable to the subject matter brought before the mediator. To the maximum extent practicable, JAMS, the mediator, and the parties shall take all action required to conclude any mediation proceeding within 180 days of the filing of the dispute with JAMS. Should the parties be unable to resolve the dispute or claim in accordance with this stated procedure, a civil action may be commenced under the laws of the State of California. This alternative dispute resolution provision shall survive termination, amendment, or expiration of this License.

J. Governing Law. This License shall be governed in accordance with the laws of the State of California. Venue shall be in Los Angeles County.

K. Notices. Any notice required or permitted by this License shall be in writing and shall be properly addressed to the other party at the following address or to such other address as may be provided in writing by either party from time to time, shall be sent by any recognized commercial overnight courier or United States registered or certified mail, postage prepaid, return receipt requested, and shall be concurrently sent by facsimile:

To Licensor: TransTrack Systems®, Inc.
Attn: Legal
5265 Rockwell Drive, NE
Cedar Rapids, IA 52402

To Licensee: SAN DIEGO METROPOLITAN TRANSIT SYSTEM
1255 Imperial Ave, Suite 1000
San Diego, CA 92101
Attention: MTS General Counsel
Email: Karen.Landers@sdmts.com

L. Survival. Sections 1 through 5 as well as Sections 7 and 8 of this Article IV shall survive the termination of this License.

IN WITNESS WHEREOF the parties hereto have executed this End-User Software License, Training and Implementation Support Agreement as of the date and at the place first above noted.

LICENSOR:	LICENSEE:
TRANSTRACK SYSTEMS®, Inc.	SAN DIEGO METROPOLITAN TRANSIT SYSTEM
By: _____	By: _____
Name: _____	Name: Sharon Cooney
Title: _____	Title: Chief Executive Officer
Date:_____	Date:_____

EXHIBIT "A"
DESCRIPTION OF THE SOFTWARE APPLICATION AVAILABLE ON-LINE

TransTrack Manager® is the name of the Software application, available on-line, that is the subject of this License Agreement. Internet use of the TransTrack Manager® application ("Software") requires Licensee to have a web browser compatible with the Software (e.g., Microsoft Internet Explorer 8 or higher, Google Chrome, Mozilla Firefox, Safari). Licensee work stations used to access the Software require the following: (1) Operating System – Windows 8 or higher; (2) Processor – 2GH or higher; and (3) Physical Memory – 4GB of RAM or higher. The Software may not be compatible with cell or smart phones. Modules available with this Software License are as follows.

- Organization
- Routes
- Farebox
- Operations
- Safety
- Fleet
- Finance
- Plan
- Personnel
- Feedback
- Support
- Utilities (e.g., User Security)
- Analytics

Functions available to Software users include:

- Edit (Add, Delete, Save, Cancel, Close)
- Show Filters
- Export
- Report
- View Settings
- Import

EXHIBIT "B"
SET-UP AND TRAINING SERVICES

Not Applicable.

EXHIBIT "C"
MODULAR ADD-ONS & CUSTOMIZED PROGRAMMING SERVICES

Licensee shall have access to Modular Add-ons specified below. Fees associated with Modular Add-Ons are shown in Exhibit "F".

Modular Add-ons

- Daily Passengers
- Daily Activity, Safety & Roadcalls
- Agency Employees, Training & Certifications
- Service Monitoring
- Customer Feedback & Investigation

Customized Programming

No customized programming is anticipated as system is fully deployed.

Additional Software Engineering services are available on a time and materials basis at the rate specified in Exhibit "F". The Licensee agrees to validate reports, imports and other customer applications and any subsequent revisions within 14 days of the report or revision being made available. Licensee is responsible for all validation, unless otherwise specified.

Licensee may request custom modifications to the Software to allow for customized reports. Licensor has agreed to review the request for the custom modifications ("Modifications"). If the parties agree to create the Modifications all terms and conditions of the License shall remain in full force and effect in addition to those listed in this Exhibit "C". If there is any conflict between the main body of the License and this Exhibit C, solely regarding the terms and conditions of the Services to create and maintain the Modifications, then the provisions of this Exhibit "C" shall prevail.

Modifications

Custom modifications are not proposed at this time.

1. All Services to create, consult, train, maintain and service the Modifications will be billed to Licensee on a time and materials basis as further set forth in the attached Exhibit "F".
2. Licensee will provide Licensor with specifications for the Modifications which shall include technical specifications, system requirements, end results desired, estimated time frame for completion and any other

information Licensor deems necessary to evaluate its ability to create the Modifications.

3. Licensor will review all requested items included in #2 above and discuss with Licensee the ability of Licensor to produce, service and maintain the Modifications. Licensor will also provide an estimated price for all Services for initial creation as well as continuing service and support. Licensor shall also inform Licensee if its timetable for completion is reasonable and can be accomplished in a timely fashion.

4. Once Licensor has reviewed all of the above and discussed same with Licensee, a final time table shall be agreed upon as well as an estimate for a range of fees, which will be invoiced to Licensee for the Modifications. After that point, should Licensor receive other requests from Licensee for further changes to the current Software over and above what is initially reviewed and requested in #2 above, the time table for completion and cost will be subject to change based on Licensor's evaluation of the changes and its ability to create and maintain what Licensee has requested.

5. Licensor will need the cooperation and access to certain of the Licensee's employees or data to create the Modifications and to perform efficiently, correctly and in a timely manner. Any inability to provide the necessary advice, support or access to the people, data or materials necessary for Licensee's completion of the Modifications may require adjustments to the time table already agreed to as well as the costs for same.

6. After successful installation on the domain of the Modifications, Licensee shall have a fourteen (14) day testing/acceptance period ("Test Period") during which it shall utilize the Modifications and determine if they meet the specifications given to Licensor. During that period, Licensor shall provide advice and assistance to Licensee as requested. The costs for Licensor's assistance shall also be on a time and materials basis but will have already been included in the range of costs for the entire project.

7. Should there be any problems with the Modifications performing their desired results for the custom reports; Licensee shall so notify Licensor during the Test Period with specificity to enable Licensor to correct the problems. After Licensor has completed its adjustments as necessary to ensure that the Modifications meet the specifications, Licensee will have an additional seven (7) days in which to test and accept the revised Modifications.

8. If after that additional time, Licensor is unable to meet the criteria listed in the specifications given to Licensor, Licensee shall be entitled to reject the Modifications in whole. After rejection of the Modifications for failure to meet the required specifications, Licensee shall be entitled to the return of all Fees paid for the Modifications within a reasonable period after rejection. Notwithstanding the foregoing however, Licensee may not unreasonably reject the Modifications.
9. Return of the Fees for the Modifications shall be the sole and exclusive remedy for the inability of Licensor to meet the specifications of Licensee. All terms related to disclaimers of warranties as well as limits on liability listed in the main body of this License contained in Article IV, Sections 4 and 5, shall also apply to the Services as they relate to the Modifications.
10. Licensee represents and warrants that it is the owner or licensee of the specifications or other information provided to Licensor for the creation of the Modifications and has the right to provide same to Licensor. Licensee shall defend, indemnify and hold harmless Licensor, its officers, employees and agents, from and against any claim that the specifications and information once provided to Licensor whether prior to or after creation of the Modifications and their integration into Licensee's system and network, infringe the intellectual property rights or breach any contract rights it may have with a third party. Such indemnity shall include all costs, expense and fees, including reasonable attorney's fees. All steps and obligations to obtain the full indemnification for any such claim as specified in Article IV, Section 2 of this License, as they relate to Licensee, shall now be the obligation of Licensor. There shall be no return of fees to Licensee in this event since, it will be the indemnitor. However, the parties shall have all termination rights specified in Section 2 of Article IV.

EXHIBIT "D"
SUPPORT SERVICES

Licensor will be the Internet Service Provider of the Software application, available to Licensee through the Internet at the web address: www.transtrack.net. Access to this domain will be through a special user name and password established for Licensee.

Licensed Software Uptime

Uptime means that all functionality of the Licensed Software specified herein are operational. The Software application shall be available 24 hours/day, 7 days/week, and 365 days/year. The Licensed Software as specified herein shall be available 98% of this time, excluding scheduled maintenance and factors associated with Licensee's Internet connection, as measured on a rolling 30-day period.

Procedures for Licensee users in the event that access is denied will be covered in training. This includes trouble-shooting to determine whether the problem is the Licensee's Internet connection or the server of the Licensor or the Software application itself. Licensor technical support staff, upon notification by Licensee staff, shall address problems with the server of the Licensor or Software application immediately.

Operations Support Response Time

Licensor will provide support and respond to inquiries during normal business hours (8:30 a.m. to 5:00 p.m. Pacific Time Monday – Friday). Licensor operations support will be prepared to research data and information of the Licensee and make this information available to Licensee as reasonably requested. Questions and requests for technical support may be made to Licensor, by Licensee staff, using the telephone or with our online help desk. Urgent and after-hour needs may be made known to Licensor using the paging system and answering service. Expanded technical assistance hours may be arranged in advance for special projects or periods of intense data input and analysis. Methods of obtaining help will be covered in training.

Technical problems will be investigated and fixed with due diligence. Activities and processes for which the Software application is designed are generally not time-critical. Those determined to be critical will be supported with a paper backup in the event of a system failure that cannot be repaired within 30 minutes.

Data Back-Up and Retention

Licensor will back-up all data on a nightly basis and keep a copy of the data for a 30-day period. Historical data will be retained in summary format for up to five (5) years. AVL and APC detailed data will be retained for two (2) years.

Security Standards

Personnel (System Administrator) of the Licensee will be responsible for determining and maintaining security to access data of the Licensee on the Domain.

Licensor agrees that the security provided on the server will not allow unauthorized traffic to access Licensee data.

EXHIBIT "E"
REPORTS

"Working Reports" are those available as an option in the majority of Views in all Modules. Working reports primarily provide data in tabular format and may be exported in coma-delimited format. Reports may also be exported. Microsoft software products may be used by the Licensee to configure data in report exports.

"Custom Reports" are those that use information from more than one view or are designed to the specifications of the Licensee. Funds have been included in Exhibit F for Customized Reports, to be determined during Phase 1 and implemented at the discretion of the Licensee.

Custom Reports are not proposed at this time.

Software Engineering services required for development of Custom Reports are available on a time and materials basis at the rate specified in Exhibit "F". The Licensee agrees to validate reports and any subsequent revisions within 14 days of the report or revision being made available. Licensee is responsible for all validation, unless otherwise specified in the Custom Report price.

EXHIBIT "F"
FEE SCHEDULE

	Base Annual	Addtl. Annual	Total Annual
FY-21	$ 34,530	$ 19,170	$ 53,700
FY-22	$ 35,556	$ 19,745	$ 55,301
FY-23	$ 36,633	$ 20,337	$ 56,970
FY-24	$ 37,732	$ 20,948	$ 58,680
FY-25	$ 38,864	$ 21,576	$ 60,440
FY-26	$ 40,030	$ 22,223	$ 62,253
FY-27	$ 41,231	$ 22,890	$ 64,121
FY-28	$ 42,468	$ 23,577	$ 66,044
FY-29	$ 43,742	$ 24,284	$ 68,026
FY-30	$ 45,054	$ 25,013	$ 70,066
		Total	$ 615,602

Onetime	$ 84,000

Rates based on greater than 300 active vehicles, modular functionality and set-up, training and support services defined in Exhibits A through E. If there are any changes requested by Licensee then the rate shall be increased in accordance with Licensor's then current published price list. With no changes in functionality or service levels, the annual maintenance and support services fees for continued on-line service shall not increase by more than 15% (Cap) per year after the initial contract period.

In the event that the Licensee commences use of the Escrowed Materials defined in Article IV, Section 7A, it shall require that the Licensee procure third-party software at the expense of the Licensee.

Annual Pricing assumes a maximum of 3% inflation in the US market. TransTrack reserves the right to adjust annual pricing should inflation exceed that rate.

Onetime costs will be billed progressively as project elements identified in the project in Exhibit G are approved and deployed. Addtl. Annual Fees will be billed in accordance with the project elements in Exhibit G and will be billed as these modules/upgrades are approved and deployed.

Hourly rates for additional services are available on a Time & Materials basis: Training $185 per hour; Software Engineer $175 per hour; and Data Entry $100 per hour.

EXHIBIT "G"
PROJECT PROPOSAL

MODULAR SYSTEM ADD-ONS (REVISED VERSION 3)

Submitted To

SAN DIEGO
METROPOLITAN TRANSIT SYSTEM (MTS)

Prepared by

TransTrack SOLUTIONS GROUP

April 21, 2020

Overview

During a recent onsite review, TransTrack met with the Contract Services staff to review areas where reporting could be enhanced within TransTrack to maximize efficiency and to provided oversight for contracted operations. TransTrack added optional pricing to the proposal for inclusion of the Copley Park Division to unify reporting for the Contract Services department.

Over the following pages you will find detailed descriptions of the items that would be included in each of the following add-on areas:

- Vehicle Inspections Data (PMI Compliance)
- Fleet Inventory Tracking
- Increased controls for Tracking/Validating Missed Trips
- Custom Reporting – Fixed Route Statistics Report & Consolidated Stats Report
- Standby Bus Usage Tracking/Reporting
- Analytics – Safety & Analytics
- MTS Access Tracking (Trapeze PASS Import)

Pricing for System Add-Ons

Item	Description	Hours	Rate/Hr	One Time Price	Annual Cost	Approval
1a	Vehicle Inspections - Preventative Maintenance Inspections (PMI) License				$ 2,000	
1b	Vehicle Data Import - South Bay/East County (Assumes same system is being used at both locations with same configuration)	60	$ 150	$ 9,000	$ 900	
1c	Vehicle Data Import - Copley Park (optional if MTS Access & Minibus Data needs to be included/tracked)	60	$ 150	$ 9,000	$ 900	
1d	Vehicle Inspections - Configuration & Training	24	$ 150	$ 3,600		
2a	Fleet Inventory License				$ 1,500	
2b	Fleet Inventory Configuration/Training	16	$ 150	$ 2,400		
3	Missed Trip Validation - Add check box to view to filter upon for verification, add comment fields to missed trip reasons (other) and unexcused missed trip reasons	20	$ 150	$ 3,000		
4a	Fixed Route Stats Report	24	$ 150	$ 3,600	$ 720	
4b	Consolidated Stats Reports	40	$ 150	$ 6,000	$ 1,200	
5a	Standby Process/Report Scoping	40	$ 150	$ 6,000		
5b	Standby Views & Reports Programming (Time & Materials)	160	$ 150	$ 24,000	$ 4,800	
5c	Standby Views Configuration & Training	16	$ 150	$ 2,400		
6a	Analytics (Safety & Maintenance) - License				$ 1,750	
6b	Analytics Configuration & Training	24	$ 150	$ 3,600		
7a	DR Scheduling System/Daily Trip Sheet License				$ 4,500	
7b	Trapeze PASS Import	60	$ 150	$ 9,000	$ 900	
7c	DR Scheduling Configuration & Training	16	$ 150	$ 2,400		

Any charge for interfacing with outside vendors is not the responsibility of TransTrack (please note there would be no interface fee for Trapeze PASS). Additionally, TransTrack would progressively bill for work completed each month. This pricing assumes all items are ordered under the same contract.

Total Pricing for 10-year Contract

Base Contract Pricing (Pricing without any additional project costs)

	Base Annual	
Year 1	$	34,530
Year 2	$	35,556
Year 3	$	36,633
Year 4	$	37,732
Year 5	$	38,864
Year 6	$	40,030
Year 7	$	41,231
Year 8	$	42,468
Year 9	$	43,742
Year 10	$	45,054
Total	$	395,839

Note: Annual Pricing assumes a maximum of 3% inflation in the US market. TransTrack reserves the right to adjust annual pricing should inflation exceed that rate.

Contract Pricing including Base and Project Onetime and Annual Fees

	Base Annual		Addtl. Annual		Total Annual	
Year 1	$	34,530	$	19,170	$	53,700
Year 2	$	35,556	$	19,745	$	55,301
Year 3	$	36,633	$	20,337	$	56,970
Year 4	$	37,732	$	20,948	$	58,680
Year 5	$	38,864	$	21,576	$	60,440
Year 6	$	40,030	$	22,223	$	62,253
Year 7	$	41,231	$	22,890	$	64,121
Year 8	$	42,468	$	23,577	$	66,044
Year 9	$	43,742	$	24,284	$	68,026
Year 10	$	45,054	$	25,013	$	70,066
			Total		$	615,602

Onetime	$	84,000

Note: Annual Pricing assumes a maximum of 3% inflation in the US market. TransTrack reserves the right to adjust annual pricing should inflation exceed that rate.

Item 1 - Vehicle Inspections – Preventative Maintenance Inspections (PMI)

The Vehicle Inspections module provides tools to review work orders, costs, and PMI schedules for compliance. To accomplish this, TransTrack would need to develop an import from the Ron Turley & Associates (RTA) maintenance software or other maintenance software used by the South Bay & East County Divisions. The pricing provided by TransTrack assumes we can gain access to the data or RTA would write a SQL view or report for which TransTrack could query. If it is also desired to have this information for the Infor system that First Transit is using at Copley Park Division, TransTrack would need to develop an import for that maintenance system (option included in this price quote).

Through the maintenance import TransTrack can retrieve information for

- Daily Vehicle Miles, Fueling and other Fluid Quantities
- Roadcalls/Work Orders and auto assign them in the Daily Fleet Incident Sheet (if details are available in source system)
- Work Order data including labor hours and cost for each repair. TransTrack can classify work orders as Planned vs. Unplanned for analysis purposes as well.

Based on the work order detail TransTrack can aggregate fleet costs and provide PMI data tracking to automate the maintenance reporting and allow broader access to this information for MTS staff.

Fleet Reports – PMI Compliance Report [R-367]

PMI Compliance Report

Compliance By Mileage

Sub-Fleet: 2009 MCI (CB/PT) - Diesel Fuel

Vehicle: 9001				
Date: 09-17-2019	Type: 066.001 - PM-A	Mileage: 274,227	Δ 5,599	Status: On-Time
Date: 09-18-2019	Type: 066.002 - PM-B	Mileage: 274,504	Δ 11,519	Status: On-Time
Date: 12-02-2019	Type: 066.001 - PM-A	Mileage: 280,551	Δ 6,047	Status: On-Time
Vehicle: 9003				
Date: 10-02-2019	Type: 066.001 - PM-A	Mileage: 303,931	Δ 5,714	Status: On-Time
	Type: 066.002 - PM-B		Δ 11,514	Status: On-Time
Date: 12-03-2019	Type: 066.001 - PM-A	Mileage: 309,807	Δ 5,876	Status: On-Time
Vehicle: 9004				
Date: 10-04-2019	Type: 066.001 - PM-A	Mileage: 273,578	Δ 5,625	Status: On-Time
	Type: 066.002 - PM-B		Δ 11,037	Status: On-Time
Date: 12-30-2019	Type: 066.001 - PM-A	Mileage: 279,508	Δ 5,930	Status: On-Time

TransTrack has additional reports available if MTS would like to analyze the costs to maintain different sub-fleets along with reviewing for any outliers in terms of performance within a given sub-fleet. This would require that the detailed work order data be imported from RTA (or other maintenance software).

Fleet Reports – Monthly Fleet Fuel & Cost Summary Report [R-324]

Monthly Fleet Fuel & Cost Summary Report

FY19 - YTD Thru June

1. Local

Vehicle #	Miles	Fuel Quantity	Miles Per Gallon	Fuel Cost	Labor Hours	Labor Costs	Parts Costs	Service Costs	Other Costs	Total Costs	Cost Per Mile
2018-NEW FLYER-XD35-35FT LF											
1807	38,149	7,695.0	5.0	$16,929.67		$6,119.63	$3,691.10	$959.35	$0.00	$27,699.75	$0.73
1808	42,104	8,172.5	5.2	$18,090.25		$3,826.82	$5,352.87	$206.96	$0.00	$27,476.90	$0.65
1809	41,119	8,000.6	5.1	$17,606.40		$2,607.22	$1,555.54	$3.83	$0.00	$21,772.99	$0.53
1810	45,328	8,964.3	5.1	$19,733.22		$3,394.42	$1,288.13	$0.00	$0.00	$24,415.77	$0.54
Series Totals	166,700	32,832.3		$72,359.54		$15,948.09	$11,887.64	$1,170.14	$0.00	$101,365.41	$0.61

Item 2 – Fleet Inventory Tracking

When Transdev executed the original agreement with TransTrack, vehicle detail was not included. TransTrack would add the Vehicle Inventory Module to the MTS EULA which will allow access to enter detailed vehicle information pertaining to the sub-fleet data. This will allow MTS to use TransTrack as the consolidated source for vehicle information and decrease reliance on spreadsheets for tracking purposes. Additionally, with the automated import of the miles & fueling data (included in Item 1) this will help to automate A-30 reporting for NTD purposes for the MB/PT (Mode/Service Type).

TransTrack can assist MTS with initial data entry for all of the sub-fleet details or perform a one-time import off of the current fleet inventory list.

Item 3 – Increased controls for Tracking/Validating Missed Trips

During the meeting with MTS, it was requested that TransTrack add a drop down to denote whether the trip has been excused, unexcused, or not-reviewed to the Daily Activity Sheet to allow MTS to track when the missed trip has been reviewed by staff. The drop down would be filterable to allow MTS staff to exclude records that have already been reviewed allowing staff to focus on records that were not yet reviewed.

There is also a need to add two comment boxes. One comment box would be associated with the missed trip incident, and tied to a dependant dropdown incident type/reason of "other", this selection would upon selection of other, open an text field for the radio operator to input the reason for the missed trip. The second comment box would be tailored to the missed trip checkbox. This field would be available for unexcused missed

trips to allow the contractor to input a reason that the trip should be excused. We will work with MTS to fully design and implement these features as part of this proposal.

The placement of the check box can be tailored to MTS staff preferences (we recommend that it be added towards the bottom the edit screen to eliminate accidental checking by dispatch staff).

Item 4 – Custom Programming, Consolidated Status Report

MTS currently tracks department data both at the route (by division) and Program & Division level (by cost center) in several reports. All the fixed route data is currently tracked in TransTrack. In Item 6, we propose pulling in the MTS Access data from Trapeze PASS, which will round out the statistics for the Contract Services Department and allow complete reporting.

For the Monthly Statistics by Route, TransTrack would generate a report similar to the existing version. To allow for future expansion, TransTrack recommends that the report auto-wrap which would eliminate the need for custom programming to make columns fit within the report view.

MTS CONTRACT SERVICES - EAST COUNTY FIXED ROUTE STATISTICS REPORT

FY20 REVENUE MILES

ESTIMATED ACTUAL

FY20	27H-F	115H-F	815*	816	832 H-F	833 EO	834	840*	852*	854	855*	856*	864*	872	874*	875*	921H-F	923*	926*	EO Fixed	200	290	Express	888	891	892	894	Rural	EO Subtotal
Jul-19	19,020	14,338	9,869	6,232	1,940	0	2,148	11,911	12,275	3,242	6,837	29,530	10,336	1,979	6,763	6,164	19,689	13,225	13,319	165,957	15,402	14,333	29,816	1,442	710	765	9,854	11,911	207,682
Aug-19	19,019	14,373	10,153	6,239	1,940	0	2,148	12,169	12,607	4,927	6,988	29,151	10,559	1,977	6,990	7,054	19,705	13,430	14,244	170,133	15,596	14,333	29,930	1,442	720	677	9,240	12,207	212,258
Sep-19	9,839	13,111	9,134	7,478	1,743	0	1,953	10,914	11,316	6,216	6,256	19,794	9,477	1,799	6,206	6,262	9,732	12,071	12,744	155,169	14,199	12,925	27,123	1,461	715	767	9,466	11,349	193,451
01Total	31,467	41,822	29,250	23,949	5,630	0	6,249	34,974	36,278	14,595	20,074	60,174	30,372	5,754	19,972	20,160	31,127	38,724	40,029	491,259	45,095	41,590	86,786	4,345	2,145	2,219	28,700	35,567	613,592
Oct-19	11,327	15,009	10,401	6,686	2,026	0	2,245	12,460	12,771	7,238	7,111	21,388	10,760	2,064	7,058	7,141	11,170	13,709	14,361	176,921	16,224	14,977	31,201	1,288	745	887	9,651	12,571	220,693
Nov-19	9,842	13,192	9,329	7,483	1,771	94	1,929	11,189	11,735	5,911	6,419	19,118	9,761	1,799	6,331	6,426	9,732	12,267	13,156	157,405	14,874	13,030	27,904	1313	753	716	8,411	11,193	196,702
Dec-19	10,337	13,723	9,552	7,165	1,954	282	2,050	11,424	11,995	4,954	6,543	19,429	9,906	1,805	6,457	6,576	10,193	12,459	13,245	160,993	14,813	13,661	28,473	1,419	757	715	8,832	11,723	201,991
02Total	31,506	41,915	29,281	23,954	5,640	377	6,224	35,074	36,311	18,175	20,071	60,135	30,260	5,740	19,134	20,142	31,095	38,715	40,762	495,319	45,912	41,668	86,788	4,020	2,255	2,318	26,894	35,487	617,586
Jan-20																				0			0					0	0
Feb-20																				0			0					0	0
Mar-20																				0			0					0	0
03Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr-20																				0			0					0	0
May-20																				0			0					0	0
Jun-20																				0			0					0	0
04Total	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FY TOTAL	62,993	83,736	58,530	47,902	11,269		12,473	69,980	72,589	32,770	40,144	120,311	60,740	11,502	39,106	40,302	62,222	77,449	81,612	986,578	90,207	83,259	173,544	8,365	4,400	4,537	53,612	71,054	1,231,178

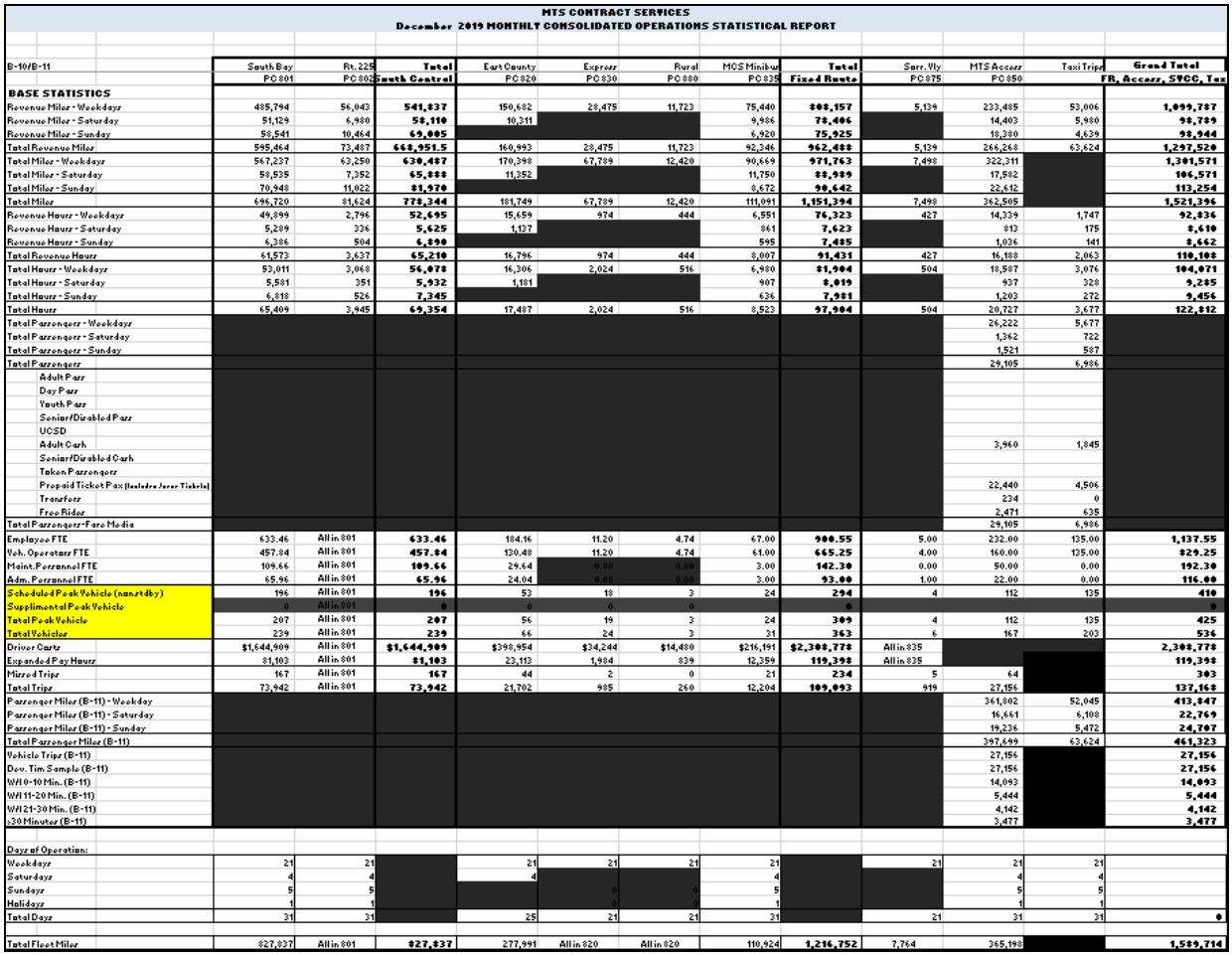
MTS CONTRACT SERVICES - EAST COUNTY FIXED ROUTE STATISTICS REPORT

FY20 REVENUE HOURS

ESTIMATED ACTUAL

FY20	27H-F	115H-F	815*	816	832 H-F	833 EO	834	840*	852*	854	855*	856*	864*	872	874*	875*	921H-F	923*	926*	EO Fixed	200	290	Express	888	891	892	894	Rural	EO Subtotal
Jul-19	1,117	1,216	1,146	748	191	0	210	1,211	1,358	397	726	1,925	1,175	244	693	708	1,142	1,242	1,384	17,331	499	520	1,019	47	24	19	359	449	18,799
Aug-19	1,185	1,218	1,372	766	191	0	210	1,241	1,404	452	741	1,953	1,207	294	707	723	1,143	1,307	1,638	17,752	508	520	1,029	45	23	20	368	466	19,220
Sep-19	1,067	1,111	1,233.5	695.3	171.0	0	191.3	1,112.9	1,282.3	570	664.3	1,769.6	1,076.9	267.3	636.6	647.4	1,038.7	1,177.0	1,462.2	16,109	455	472	928	53	23	23	340	440	17,914
01Total	3,449	3,545	3,751	2,224	553	0	612	3,565	4,045	1,329	2,132	5,628	3,462	805	2,036	2,079	3,323	3,726	4,484	51,222	1,455	1,512	2,967	145	70	72	1,075	1,362	55,551
Oct-19	1,229	1,269	1,404	800	199	0	229	1,261	1,413	653	756	2,006	1,223	307	721	737	1,193	1,347	1,481	18,240	524	543	1,067	44	25	22	393	474	19,929
Nov-19	1,068	1,111	1,260	696	173	17	191	1,144	1,298	541	651	1,789	1,111	267	650	664	1,039	1,152	1,510	16,493	454	473	927	43	25	22	337	426	17,797
Dec-19	1,122	1,165	1,290	731	192	51	201	1,163	1,306	453	645	1,840	1,128	230	645	675	1,088	1,235	1,522	16,796	470	496	974	47	24	23	350	444	18,214
02Total	3,420	3,545	3,954	2,227	564	68	632	3,568	0	1,646	2,052	5,634	3,462	805	2,036	2,080	3,320	3,735	4,681	51,597	1,454	1,512	2,968	91	74	67	1,079	1,345	55,940
Jan-20																				0			0					0	0
Feb-20																				0			0					0	0
Mar-20																				0			0					0	0
03Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr-20																				0			0					0	0
May-20																				0			0					0	0
Jun-20																				0			0					0	0
04Total	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FY TOTAL	6,869	7,109	7,705	4,452	1,109		1,224	7,133	4,045	2,974	4,184	11,274	6,924	1,610	4,072	4,159	6,642	7,461	9,167	102,819	2,911	3,025	5,935	236	144	139	2,145	2,707	111,461

For the Consolidate Stats Reports, TransTrack would generate the report that is similar to the existing version. The project codes will have to be assigned in the Route Assignments view as one of the levels and TransTrack can group that information for all the associated project codes by division.



MTS CONTRACT SERVICES
December 2019 MONTHLY CONSOLIDATED OPERATIONS STATISTICAL REPORT

B-10/B-11	South Bay	Rt. 225	Total	East County	Express	Rural	MCS Minibus	Total	Surr. Vly	MTS Access	Taxi Trips	Grand Total
	PC 801	PC 802	South Central	PC 820	PC 830	PC 880	PC 835	Fixed Route	PC 875	PC 850		FR, Access, STOC, Tax
BASE STATISTICS												
Revenue Miles - Weekdays	485,794	56,043	**541,837**	150,682	28,475	11,723	75,440	**808,157**	5,139	233,485	53,006	**1,099,787**
Revenue Miles - Saturday	51,129	6,980	**58,110**	10,311			9,986	**78,406**		14,403	5,980	**98,789**
Revenue Miles - Sunday	58,541	10,464	**69,005**				6,920	**75,925**		18,380	4,639	**98,944**
Total Revenue Miles	595,464	73,487	**668,951.5**	160,993	28,475	11,723	92,346	**962,488**	5,139	266,268	63,624	**1,297,520**
Total Miles - Weekdays	567,237	63,250	**630,487**	170,398	67,789	12,420	90,669	**971,763**	7,498	322,311		**1,301,571**
Total Miles - Saturday	58,535	7,382	**65,888**	11,352			11,750	**88,989**		17,582		**106,571**
Total Miles - Sunday	70,948	11,022	**81,970**				8,672	**90,642**		22,612		**113,254**
Total Miles	696,720	81,624	**778,344**	181,749	67,789	12,420	111,091	**1,151,394**	7,498	362,505		**1,521,394**
Revenue Hours - Weekdays	49,899	2,796	**52,695**	15,659	974	444	6,951	**76,323**	427	14,339	1,747	**92,836**
Revenue Hours - Saturday	5,289	336	**5,625**	1,137			861	**7,623**		812	175	**8,610**
Revenue Hours - Sunday	6,386	504	**6,890**				595	**7,485**		1,036	141	**8,662**
Total Revenue Hours	61,573	3,637	**65,210**	16,796	974	444	8,007	**91,431**	427	16,188	2,063	**110,108**
Total Hours - Weekdays	53,011	3,068	**56,078**	16,306	2,024	516	6,980	**81,904**	504	18,587	3,076	**104,071**
Total Hours - Saturday	5,581	351	**5,932**	1,181			907	**8,019**		937	328	**9,285**
Total Hours - Sunday	6,818	526	**7,345**				636	**7,981**		1,203	272	**9,456**
Total Hours	65,409	3,945	**69,354**	17,487	2,024	516	8,523	**97,904**	504	20,727	3,677	**122,812**
Total Passengers - Weekdays										26,222	5,677	
Total Passengers - Saturday										1,362	722	
Total Passengers - Sunday										1,521	587	
Total Passengers										29,105	6,986	
Adult Pass												
Day Pass												
Youth Pass												
Senior/Disabled Pass												
UCSD												
Adult Cash										3,960	1,845	
Senior/Disabled Cash												
Taken Passengers												
Prepaid Ticket Pax (Includes Inter Ticket)										22,440	4,506	
Transfers										234	0	
Free Rider										2,471	635	
Total Passengers-Fare Media										29,105	6,986	
Employee FTE	633.46	All in 801	**633.46**	184.16	11.20	4.74	67.00	**900.55**	5.00	232.00	135.00	**1,137.55**
Veh. Operators FTE	457.84	All in 801	**457.84**	130.48	11.20	4.74	61.00	**665.25**	4.00	160.00	135.00	**829.25**
Maint. Personnel FTE	109.66	All in 801	**109.66**	29.64	0.00	0.00	3.00	**142.30**	0.00	50.00	0.00	**192.30**
Adm. Personnel FTE	65.96	All in 801	**65.96**	24.04	0.00	0.00	3.00	**93.00**	1.00	22.00	0.00	**116.00**
Scheduled Peak Vehicle (non-rtdby)	196	All in 801	**196**	53	18	3	24	**294**	4	112	135	**410**
Supplimental Peak Vehicle		All in 801										
Total Peak Vehicle	207	All in 801	**207**	56	19	3	24	**309**	4	112	135	**425**
Total Vehicles	239	All in 801	**239**	66	24	3	31	**363**	5	167	203	**536**
Driver Carty	$1,644,909	All in 801	**$1,644,909**	$398,954	$34,244	$14,480	$216,191	**$2,308,778**	All in 835			**2,308,778**
Expanded Pay Hours	81,193	All in 801	**81,193**	23,112	1,984	839	12,359	**119,398**	All in 835			**119,398**
Mixed Trips	167	All in 801	**167**	44	2	0	21	**234**	5	64		**303**
Total Trips	73,942	All in 801	**73,942**	21,702	985	260	12,204	**109,093**	919	27,156		**137,168**
Passenger Miles (B-11) - Weekday										361,802	52,045	**413,847**
Passenger Miles (B-11) - Saturday										16,661	6,108	**22,769**
Passenger Miles (B-11) - Sunday										19,236	5,472	**24,707**
Total Passenger Miles (B-11)										397,699	63,624	**461,323**
Vehicle Trips (B-11)										27,156		**27,156**
Dev. Tim Sample (B-11)										27,156		**27,156**
Wt 0-10 Min. (B-11)										14,093		**14,093**
Wt 11-20 Min. (B-11)										5,444		**5,444**
Wt 21-30 Min. (B-11)										4,142		**4,142**
>30 Minutes (B-11)										3,477		**3,477**
Days of Operation:												
Weekdays	21	21		21	21	21	21		21	21	21	
Saturdays	4	4		4	4	4	4		4	4	4	
Sundays	5	5			0	0	5			5	5	
Holidays	1	1			0	0	1			1	1	
Total Days	31	31		25	21	21	31		21	31	31	0
Total Fleet Miles	827,837	All in 801	**827,837**	277,991	All in 820	All in 820	110,924	**1,216,752**	7,764	365,198		**1,589,714**

Item 5 – Standby Bus Usage Tracking/Reporting

TransTrack will develop a Stand-by Bus Reporting tool to help MTS accurately track standby utilization and billing. It is currently envisioned that TransTrack could utilize the exception to schedule methodology for this process (similar to the current methodology utilized for the Hours and Miles of service for MTS). Standby hours would be added to the Route Plan view with the location being the route name in TransTrack as noted in the MTS Contract Services Standby Bus Specifications sheet.

MTS CONTRACT SERVICES STANDBY BUS SPECIFICATIONS
EFFECTIVE June 9, 2019

Updated: April 26, 2019

					SCHEDULED HOURS							
DIV	BID/ EB	#	AREA	LOCATION	MON	TUES	WED	THUR	FRI	SAT	SUN	NOTES
SB	BID	1	DOWNTOWN SD	STATE & B Vicinity	6AM-6PM	6AM-6PM	6AM-6PM	6AM-6PM	6AM-6PM	10AM - 6PM	10AM-4PM	12 hrs weekday; 8 hrs SAT; 6 hrs SUN
SB	BID	2	EUCLID AVE TC	Euclid Ave Transit Center	6AM - 7PM	6AM - 7PM	6AM - 7PM	6AM - 7PM	6AM - 7PM	10AM - 5:30PM	10AM-5:30PM	13 hrs weekday; 7.5 hrs weekend
SB	BID	3	NATIONAL CITY	8th Street Transit Center	6AM - 7PM	6AM - 7PM	6AM - 7PM	6AM - 7PM	6AM - 7PM			13 hrs weekday
SB	BID	4	IRIS AVE TC	Iris Ave Transit Center	5AM - 7PM	5AM - 7PM	5AM - 7PM	5AM - 7PM	5AM - 7PM	10AM-5:30PM	10AM-5:30PM	14 hrs weekday; 7.5 hrs weekend
SB	BID	5	70th STREET STATION	70th Street Station	7AM - 6PM	7AM - 6PM	7AM - 6PM	7AM - 6PM	7AM - 6PM	10AM - 5:00PM	10AM-4:30PM	11 hrs weekday; 7 hrs Saturday; 6.5 hrs Sunday
SB	BID	6	CHULA VISTA	Palomar Street Transit Center	10AM-6PM	10AM-6PM	10AM-6PM	10AM-6PM	10AM-6PM			8 hrs weekday
SB	BID	7 (AM BRT)	OMTC	Otay Mesa Transit Center	4AM - 8AM	4AM - 8AM	4AM - 8AM	4AM - 8AM	4AM - 8AM	4AM - 8AM	4AM - 8AM	4 hrs weekday; 4 hrs weekend
SB	BID	7 (PM BRT)	DOWNTOWN SD	Pacific Highway & Broadway	3PM - 7PM	3PM - 7PM	3PM - 7PM	3PM - 7PM	3PM - 7PM	3PM - 7PM	3PM - 7PM	4 hrs weekday; 4 hrs weekend

TransTrack can leverage the Daily Activity sheet to track when a standby vehicle is placed into service. This is done by adding check boxes and fields to note which standby bus and the amount of time it is running revenue service on a particular route. The intent of trying to use the Daily Activity Sheet would be to keep a single view for dispatcher use. However, as we develop the process and project scope, this functionality may need to be recorded in a separate view. The process developed will mimic the Rainbow Report.

May-02-2019 | **Thursday** | non provided time does not include cut in times

STANDBY LOCATION	RADIO	BUS#	BX	DRIVER	START TIME	END TIME	TOTAL HOURS	CUT IN Y/N	ROUTE	LOCATION WHERE BUS WAS DISPATCHED	ADDITIONAL COMMENTS	IN -TT	PAX TOT
LOCATN								Start	End	TotTime / CI / Non-I / TotUs / Prov			
DOWNTOWN: 6:00AM TO 7:00PM				Actual START and END times at location:				6:00	19:00	13.00 / 1.03 / 11.97 / 13.00 / 0.00			
DOWNTOWN		2412		Motoya, Daniel 5683	6:00	14:25	8.42	N	701-01	H Street Transit	Covering Paddle. 41508	DT	Gwen
DOWNTOWN		2312		Cornwall Eric 5218	14:25	17:58	3.55	N	709-05	Olympic Parkway	Covering Paddle. 41547	DT	Gwen
DOWNTOWN	2427	2918		Kashiwagi	17:58	19:00	1.03	Y	932-08	Iris TC	SNB 2918 CI for Bus 2849 to put route back on time Run 41161	MJ	
EUCLID TC: 6:00AM TO 7:00PM				Actual START and END times at location:				6:00	17:11	11.18 / 1.73 / 1.58 / 3.32 / 7.87			
EUCLID TC	2433	2121		Trejo, Alonzo			0.00						
EUCLID TC		2121		Angelo , Morales	13:05	14:06	1.02	N	5-03	Euclid TC	Covering Paddle. 41208	AR	Diana
EUCLID TC		2121		Angelo , Morales	14:53	16:37	1.73	Y	961-04	Encanto TC	SNB 2121 CI for bus 2864 due to ACC- COL 41231	BW	
EUCLID TC		2121	2310	Angelo , Morales	16:37	17:11	0.57	N	3-02	Logan Ave and Euclid Ave	SNB 2121 BX with 2310 due to equipment failure. 41157	jm	
8TH ST TC: 6:00AM TO 7:00PM				Actual START and END times at location:				6:00	19:00	13.00 / 3.68 / 5.25 / 8.93 / 4.07			
8TH ST TC		2407		Lopez, Norma	6:00	10:00	4.00	N	906-03	VATC	Covering paddle 41084	DT	Gwen
8TH ST TC	2405	2814	7301	Revilla,Dennis	10:10	11:25	1.25	N	961-05	Parkside & Redford Pl	SNB BX 7301 due to mechanical issues. 41089	AR	
8TH ST TC	2405	2902	2323	Revilla,Dennis	12:23	15:08	2.75	Y	5-01	Market St & 14th St	SNB 2902 CI for bus 2323 due to equipment failure 41060	BW	
8TH ST TC	2405	2401		Revilla,Dennis	16:36	17:32	0.93	Y	3-02	47th St and Logan Ave	SNB 2401 CI for 2310 due to equipment failure. 41157	MJ	
IRIS AVE TC: 5:00AM TO 7:00PM				Actual START and END times at location:				5:00	19:00	14.00 / 0.88 / 2.42 / 3.30 / 10.70			

TransTrack will also create a report which can be run on a date range basis to report on standby bus utilization, the number of billable standby hours, and standby utilization (in service time) in the given period filtered for in the report.

Standby Usage Report

October 2018

South Bay Locations	Times Stbys Provided	Total Scheduled	Cut-In Hours	Non-Provided Hours(St	Sum of Total Use((	Provided Hours(S	Billable Hours(Cut-In	% of Non-Provided	% Total Use
DOWNTOWN:	30	373.50	39.66	60.68	100.34	273.16	312.82	16%	27%
EUCLID TC:	30	340.00	32.66	47.29	79.95	260.05	292.71	14%	24%
8TH ST TC:	21	273.00	32.31	57.15	89.46	183.54	215.85	21%	33%
IRIS AVE TC:	30	367.00	48.40	62.96	111.39	255.61	304.01	17%	30%
70TH ST TC:	30	340.00	16.72	71.36	88.07	251.93	268.65	21%	26%
PALOMAR TC:	21	183.50	31.53	21.11	52.64	130.86	162.39	12%	29%
RB STATION:	19	47.50	4.55	5.87	10.42	37.08	41.63	12%	22%
PACIFIC & GRAPE	18	54.00	8.20	1.12	9.32	44.68	52.88	2%	17%
BRT 225 AM:	21	63.00	3.61	0.00	3.61	59.39	63.00	0%	6%
BRT 225 PM:	20	60.00	0.00	0.00	0.00	60.00	60.00	0%	0%
OTTC AM:	22	91.00	1.88	12.21	14.09	76.91	78.79	13%	15%
OTTC PM:	20	84.00	4.54	14.67	19.21	64.79	69.33	17%	23%
H ST TC:	6	43.50	1.27	0.67	1.94	41.56	42.83	2%	4%
7TH & MARKET:	2	26.00	7.54	6.02	13.55	12.45	19.99	23%	52%
PALM AVE TC:	11	95.25	14.91	10.32	25.23	70.02	84.93	11%	26%
EXTRA [PETCO]:		0.00	0.00	0.00	0.00	0.00	0.00	0%	0%
EXTRA [A]:	5	48.00	7.45	3.04	10.49	37.51	44.96	6%	22%
EXTRA [B]:	8	64.00	2.05	8.85	10.90	53.10	55.15	14%	17%
South Bay Grand Total	314	2553.25	257.27	383.31	640.59	1912.66	2169.93	0.15	25.1%

Petco Supervior Hours:	0.00

SB total billable hours	2169.93
EC total billable hours	142.71
TRANSDEV Grand Total	2312.64

As part of this task, TransTrack will visit the site with our Systems Architect to perform a detailed process review and develop a scope of work to design the best solution possible for both MTS and Dispatch staff. Due to the non-defined scope around the Standby reporting, TransTrack would bill all associated tasks with the programming at our hourly rate.

Item 6 – Maintenance & Safety Analytics

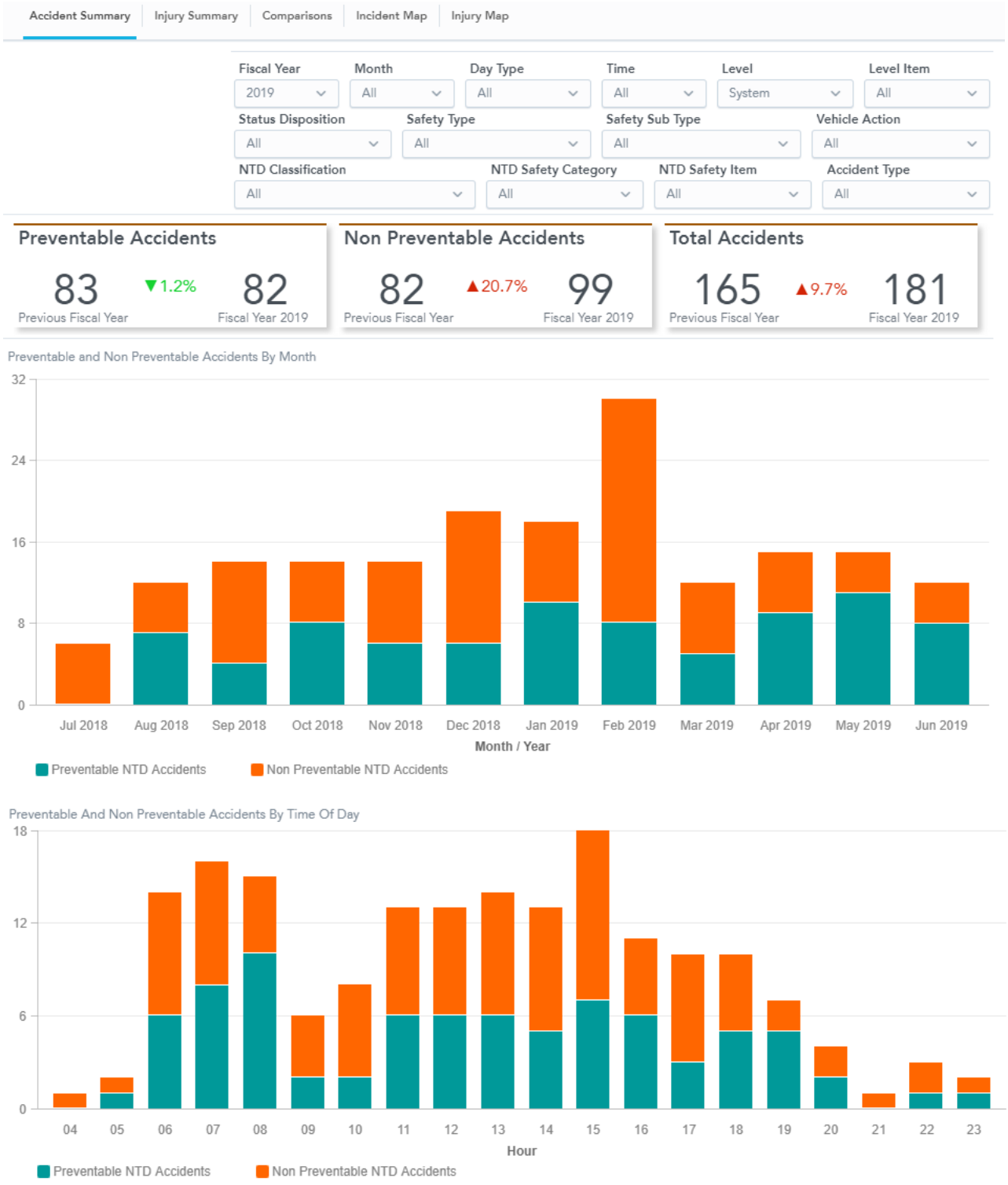
TransTrack has a built-in Analytics Platform which provides data visualization over the different data sets. These currently include:

- Maintenance Analytics [R-332]
- Safety Analytics [R-339]

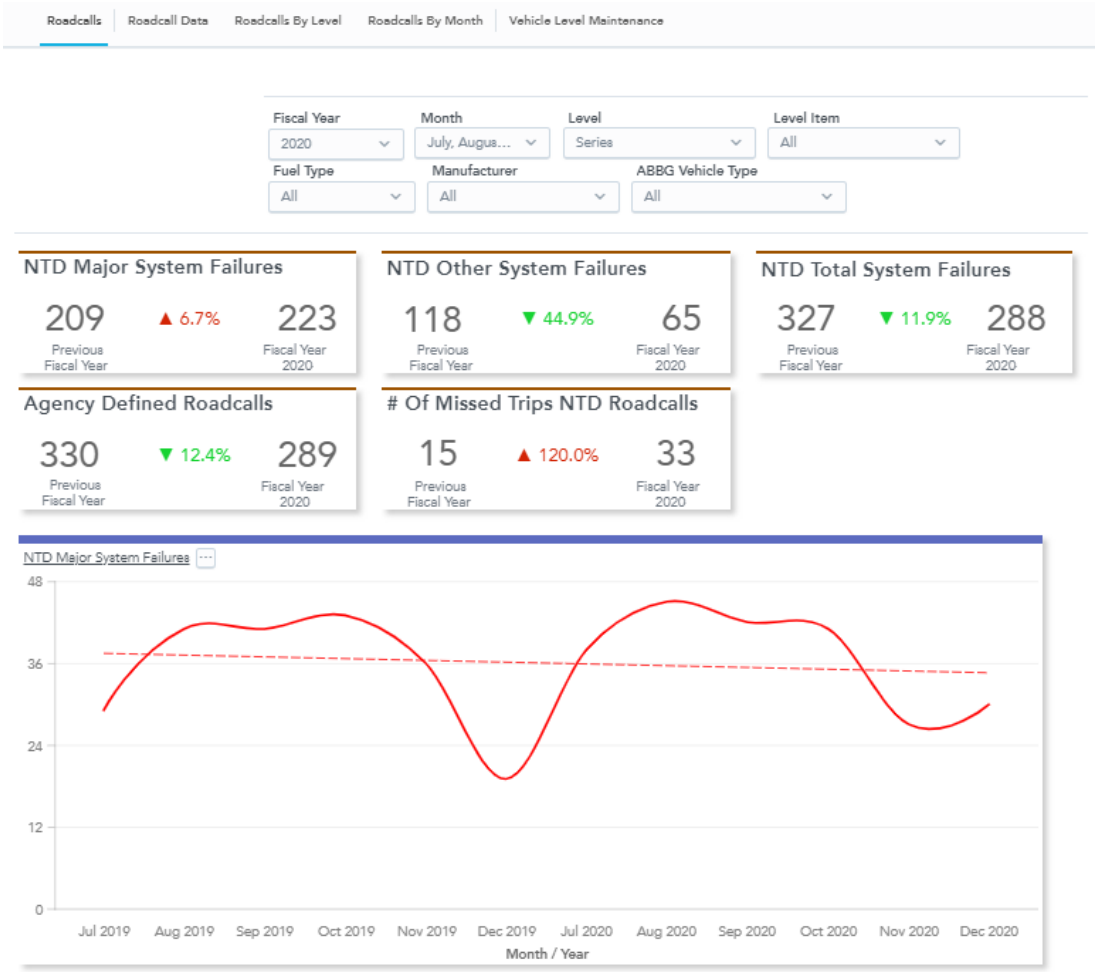
These tools use the safety and maintenance codes/elements used in TransTrack that are controlled by the Lookup Views. MTS can edit the options in the drop downs such that they are consistent with the MTS Safety Codes. TransTrack will work with MTS to review the current setup and assist in migrating to codes that are consistent with the rest of MTS practice.

Below are examples of both the Safety Analytics and Maintenance Analytics in TransTrack. Information entered or imported would be available for visualization and reporting within the Analytics platform.

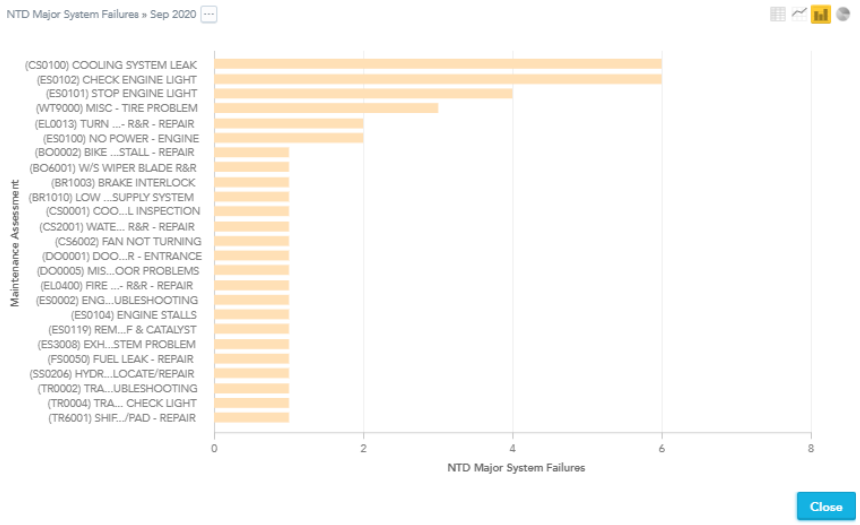
Safety Analytics [R-339] – Example of a view available within the Safety Analytics. Similar reports are available for injuries and have a map view showing where incidents are occuring for both accidents and injuries.



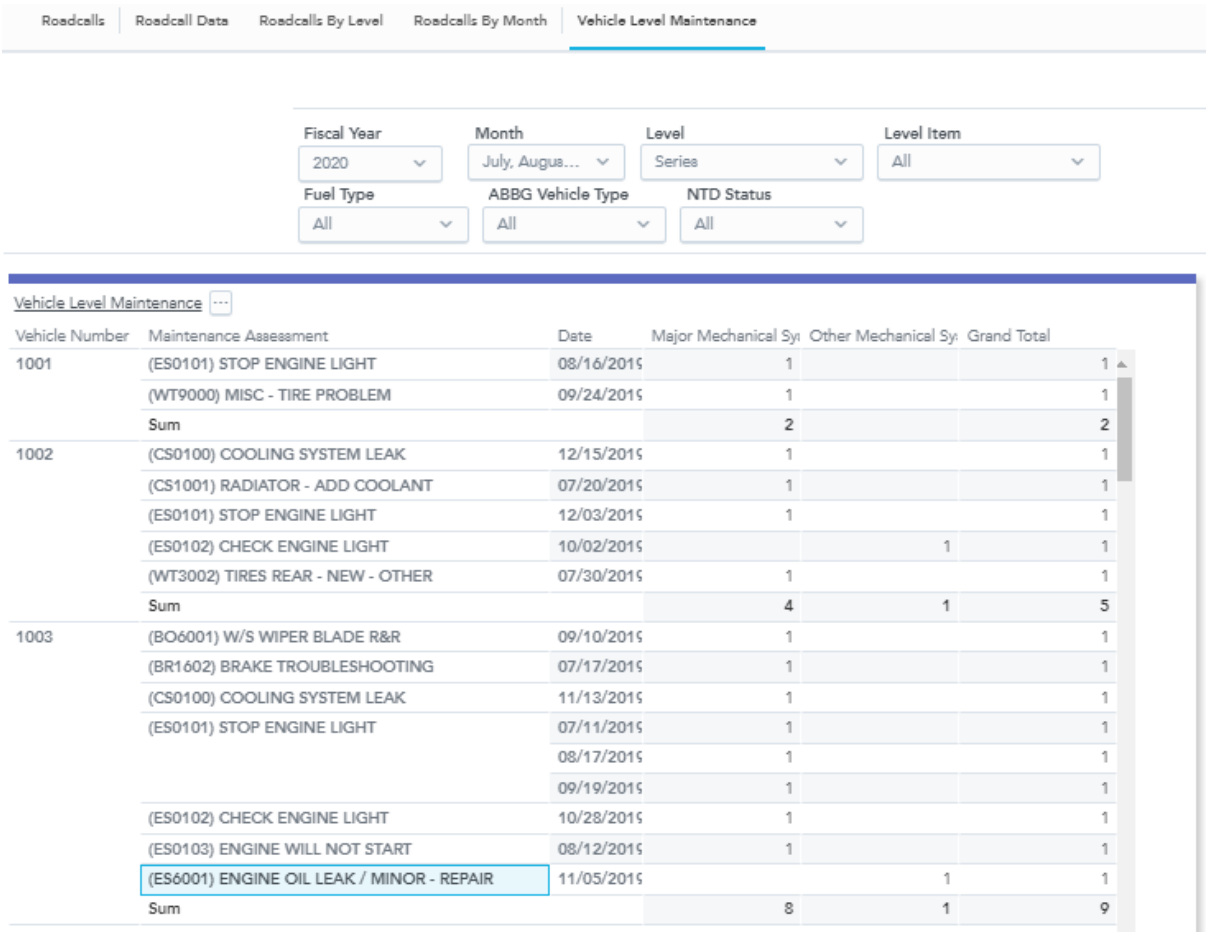
Maintenance Analytics [R-315] – The maintenance analytics cover roadcall data and presents the data in several formats. The first example below is a general display of quantity for the filtered data, and allows for visualization of trends year-to-year and month-to-month.



Within the tables, you can click on the data point to see what types of roadcalls made up the total for the month.



Another of our views allows you to see the roadcalls by vehicle. This can help determine if there are patterns for a particular vehicle or sub-fleet.



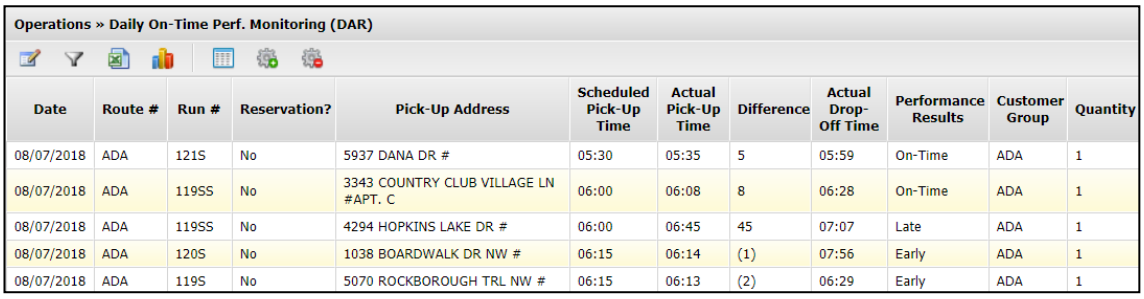
Vehicle Number	Maintenance Assessment	Date	Major Mechanical Sy	Other Mechanical Sy	Grand Total
1001	(ES0101) STOP ENGINE LIGHT	08/16/2019	1		1
	(WT9000) MISC - TIRE PROBLEM	09/24/2019	1		1
	Sum		2		2
1002	(CS0100) COOLING SYSTEM LEAK	12/15/2019	1		1
	(CS1001) RADIATOR - ADD COOLANT	07/20/2019	1		1
	(ES0101) STOP ENGINE LIGHT	12/03/2019	1		1
	(ES0102) CHECK ENGINE LIGHT	10/02/2019		1	1
	(WT3002) TIRES REAR - NEW - OTHER	07/30/2019	1		1
	Sum		4	1	5
1003	(BO6001) W/S WIPER BLADE R&R	09/10/2019	1		1
	(BR1602) BRAKE TROUBLESHOOTING	07/17/2019	1		1
	(CS0100) COOLING SYSTEM LEAK	11/13/2019	1		1
	(ES0101) STOP ENGINE LIGHT	07/11/2019	1		1
		08/17/2019	1		1
		09/19/2019	1		1
	(ES0102) CHECK ENGINE LIGHT	10/28/2019	1		1
	(ES0103) ENGINE WILL NOT START	08/12/2019	1		1
	(ES6001) ENGINE OIL LEAK / MINOR - REPAIR	11/05/2019		1	1
	Sum		8	1	9

Item 7 – MTS Access Tracking

TransTrack proposes an import with Trapeze PASS to pull in all Hours, Miles, Passenger, Passenger Miles, and On-Time Performance data for the MTS Access program which would round out the reporting in TransTrack for the Contract Services department. The Trapeze data would be imported nightly for a date range to allow for any changes in the data within Trapeze to be automatically re-imported the following day. The import can also be manually triggered by staff.

Data from Trapeze that can be imported include standard paratransit data from MTS paratransit operations, as well as data that has been integrated into Trapeze for other programs such as taxi cab operations.

The On-Time Performance data would be displayed in the Operations Module – Daily On-Time Perf. Monitoring (DAR) for each passenger pick-up is based on performance standards set by MTS.



Operations » Daily On-Time Perf. Monitoring (DAR)

Date	Route #	Run #	Reservation?	Pick-Up Address	Scheduled Pick-Up Time	Actual Pick-Up Time	Difference	Actual Drop-Off Time	Performance Results	Customer Group	Quantity
08/07/2018	ADA	121S	No	5937 DANA DR #	05:30	05:35	5	05:59	On-Time	ADA	1
08/07/2018	ADA	119SS	No	3343 COUNTRY CLUB VILLAGE LN #APT. C	06:00	06:08	8	06:28	On-Time	ADA	1
08/07/2018	ADA	119SS	No	4294 HOPKINS LAKE DR #	06:00	06:45	45	07:07	Late	ADA	1
08/07/2018	ADA	120S	No	1038 BOARDWALK DR NW #	06:15	06:14	(1)	07:56	Early	ADA	1
08/07/2018	ADA	119S	No	5070 ROCKBOROUGH TRL NW #	06:15	06:13	(2)	06:29	Early	ADA	1

In addition, TransTrack can import Trip Details which will allow MTS staff to see detail for trips performed without using a seat license for Trapeze PASS. The standard views available in TransTrack for the display of imported Trapeze PASS data are:

Operations Module:

- Daily Trip Manifest - Stores details from trip manifest such as pick-up and drop-off locations, scheduled and actual times, passengers, and reservation type
- Daily Trip Manifest Summary - Displays the summary of the Daily Trip Manifest view by date, day of week, and route

- Daily Hours & Miles Trip Sheet - Stores demand response trip sheet import information (time & odometer reading) to calculate daily total and revenue hours and miles data.
- Daily Hours & Miles Trip Sheet Summary - Summary of total hours, total miles, revenue hours, and revenue miles by day, route, and vehicle number.
- Daily On-Time Perf. Monitoring (DAR) - Stores imported daily on-time performance monitoring information by trip and/or route imported from Trapeze PASS
- Tools to measure Passengers per Hour (PPH) and On Board Time (OBT)

Farebox Module:

- Daily Passenger Sheet (DAR) - Used to store and display Daily Passenger Boarding by commonly used paratransit fare categories (Clients, PCA, Other). Information is at the Booking # level.

Routes Module:

- Daily Passenger Miles Sched System Data - Used to store NTD Passenger Mile data by Run # from Trapeze PASS.

Metropolitan Transit System

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Agenda Item No. 13

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

EIGHTY-SIX (86) MOTOROLA APX6000 RADIOS AND TWO BASE STATIONS - SOLE SOURCE CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. G2402.0-20 (in substantially the same format as Attachment A), with Motorola Solutions, Inc. (Motorola), in the amount of $350,956.81, on a sole source basis, for the purchase of 86 APX6000 radios and two base stations.

Budget Impact

The value of this agreement will not exceed $350,956.81, and is funded through the Security Department operating budget number 420033-571250, funded by Transit Security Grant Program (TSGP) funds.

DISCUSSION:

The MTS Security Department's current communications system consists of Very High Frequency (VHF) Analog Vote/Steer system with Motorola XPR 7350e handheld radios. The current system is substandard in a number of ways: low power, static, dead spots (weak or no reception) in numerous areas, not secure, insufficient battery life, and no ability to communicate directly with law enforcement agencies when working in various jurisdictions (San Diego Police, San Diego Sheriff's Department, Chula Vista Police Department, La Mesa Police Department, El Cajon Police Department, National City Police Department). These issues highlight not only enormous obstacles in conducting routine operations during non-critical information exchange, but also represent a safety issue for Code Compliance Inspectors and Transit System Security Officers (contracted security).

The Regional Communications System (RCS) is a reliable system managed by the San Diego RCS. By purchasing 86 APX6000 radios and two base stations, the MTS Security Department would become members/customers of the RCS system. This would result in a significantly stronger and more reliable communication system. The radios will also enhance our communication and response capability during critical incidents and emergencies.

The pricing provided by Motorola is through the County of San Diego's RCS contract pricing, of which MTS is a member. MTS is able to use the contract's negotiated discount pricing to obtain a significant discount (37.5%) from list prices of radios and radio equipment. MTS would not be able to negotiate a lower price than what is offered through the RCS contract. As a result, staff has determined that the price is fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute a contract with Motorola Solutions, Inc. in the amount of $350,956.81, on a sole source basis, for the purchase of 86 APX6000 radios and two base stations.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft MTS Doc. No. G2402.0-20
B. Price breakdown

STANDARD SERVICES AGREEMENT
FOR
86 PORTABLE RADIOS AND 2 BASE STATIONS

G2402.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Motorola Solutions, Inc. Address: 10680 Treena Street, Suite 200

Form of Business: Corporation San Diego, CA 92132

(Corporation, partnership, sole proprietor, etc.)

Telephone: 858-414-6647 Email Address: ken.nordholm@motorolasolutions.com

Authorized person to sign contracts: Micah Applewhite MSSSI Vice President
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Provide eighty-six (86) portable radios and two base stations as specified in the Motorola Solutions quote no. QU0000333555AG (attached as Exhibit A), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit B), Federal Requirements (attached as Exhibit C), Forms (attached as Exhibit D), and Contractor's Communications System and Services Agreement (attached as Exhibit E).

The contract term is for the duration of the 3-year extended warranty.

Payment terms shall be net 30 days from invoice date. The total cost of this contract shall not exceed $350,956.81 without the express written consent of MTS.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

QUOTE TO: San Diego Transit Enforcement - Jeremiah Johnson 619-557-4558
PREPARED BY: Andy Grimm 858-864-3660 agrimm@daywireless.com
DATE: May 28, 2020
Quote Valid through July 31, 2020 Quote # QU0000777444AG

MOTOROLA SOLUTIONS

*Line #	Qty	Part Number	Item Description	List Price	Unit Discounted Price		Total Extended Discount Price
			APX6500 BASE STATION W/ ENCRYPTION for DISPATCH				
1		M25URS9PW1AN	APX6500 7/800 MHZ MOBILE RADIO	$2,438.00	$1,523.75		
1a		W382AM	ADD: CONTROL STATION DESK MIC	$169.00	$105.63		
1b		G806BE	ENH: ASTRO DIGITAL CAI OP APX	$515.00	$321.88		
1c		G442AJ	ADD: O5 CONTROL HEAD	$432.00	$270.00		
1d		G66AM	ADD: DASH MOUNT	$125.00	$78.13		
1e		G444AE	ADD: APX CONTROL HEAD SOFTWARE	$0.00	$0.00		
1f		G361AH	ADD: P25 TRUNKING SOFTWARE	$300.00	$0.00		
1g		G51AU	ENH: SMARTZONE OPERATION APX6500	$1,200.00	$750.00		
1h		G335AW	ADD: NO RF ANTENNA NEEDED	$0.00	$0.00		
1i		G142AD	ADD: NO SPEAKER NEEDED	$0.00	$0.00		
1j		GA00580AA	ADD: TDMA OPERATION (P25 PHASE 2)	$450.00	$281.25		
1k		G91AE	ADD: CONTROL STATION POWER SUPPLY	$269.00	$168.13		
1l		W665BF	ADD: CONTROL STATION OPERATION	$70.00	$43.75		
1m		G996	ADD: OVER THE AIR PROGRAMMING (OTAP)	$100.00	$62.50		
1n		GA00235AA	ADD: NO GPS ANTENNA NEEDED	$0.00	$0.00		
1o		W969BG	ADD: MULTIPLE KEY ENCRYPTION OPERATION	$330.00	$206.25		
1p		G851AG	ADD: AES/DES ENCRYPTION	$799.00	$499.38		
1q		GA00236	ADD: 3 DAY KEY RETENTION APX	$100.00	$62.50		
1r		Q444AG	ADD: NORTH AMERICA TRADE AGREEMENT (BUY AMERICA)	$0.00	$0.00		
	2		TOTAL APX6500 BASE STATION / CONTROL STATION	$7,297.00	$4,373.15		$8,746.30
			APX6000 Model 2.5 Portable Radio with Limited Keypad				
2		H98UCF9PW6BN	APX6000 7/800MHZ MODEL 2.5 PORTABLE RADIO	$3,026.00	$1,891.25		
2a		Q806BM	ASTRO DIGITAL OPERATION	$515.00	$321.88		
2b		H38BT	SMARTZONE TRUNKING OPERATION	$1,200.00	$745.00		
2c		Q361AR	P25 9600 BAUD TRUNKING OPERATION	$300.00	$0.00		
2d		QA00580AC	TDMA OPERATION (P25 PHASE 2)	$450.00	$281.25		
2e		QA05573	LI-ION IMPRES 2, 5100 MAH BATTERY (PMNN4494) TALL	$135.00	$84.38	This is the battery option w the Radio	
2f		G996AU	OVER THE AIR PROGRAMMING (OTAP)	$100.00	$62.50		
2g		Q444AG	ADD: NORTH AMERICA TRADE AGREEMENT (BUY AMERICA)	$0.00	$0.00		
	86		TOTAL APX6000 Model 2.5 Portable, Limited Keypad	$5,726.00	$3,386.26		$291,218.36
3	35	PMNN4494	APX SPARE BATTERY, LI-ION, 5100 MAH (Tall Battery)	$198.00	$148.50		$5,197.50
4	15	NNTN8844A	IMPRES 6-UNIT MULTI CHARGER	$1,375.00	$1,031.25		$15,468.75
			(2) APX6500 Base Stations for Dispatch. (86) Model 2.5 APX6000 Handheld Radios w/ Battery, Antenna, Belt Clip. (35) Spare Batteries, (15) Mulit Chargers. Installation of Base Radios & Antenna System on Roof.		Total Equipment:		$320,630.91
					7.75 % tax on Equipment		$24,848.90
					Total Equipment and Tax		$345,479.81
5	2	G78	3 YEAR EXTENDED WARRANTY - BASE STATIONS	$168.00	$0.00	NOT TAXED	$0.00
6	86	Q58	3 YEAR EXTENDED WARRANTY - HANDHELD RADIOS	$110.00	$0.00	NOT TAXED	$0.00
7	1	SVC03SVC0124D	Onsite Installation with Antenna System, cables, connectors		$5,477.00	NOT TAXED	$5,477.00

	RCS Fee	Total # of Radios	Fee 1 Yr RCS Service
RCS Airtime Fee, Per Radio, Per Year	$924.84	88	$81,385.92
			$350,956.81
		Combined Total	$432,342.73

Order Total (Equipment, Tax, Warranty): $350,956.81

Discounted Pricing from San Diego County RCS Contract # 553982. Shipping is included at No Charge. PO's must be made out to Motorola Solutions, INC (not Day Wireless).

Metropolitan Transit System

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Agenda Item No. 14

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

ON-CALL JOB ORDER CONTRACTING (JOC) RAILROAD SIGNALS, OVERHEAD CATENARY SYSTEMS, AND TRACK WORK CONSTRUCTION SERVICES – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL312.0-20 (in substantially the same format as Attachment A), with HMS Construction, Inc. (HMS), for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $2,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

Budget Impact

The contract will be funded by various MTS capital budget accounts. Funding will be included in the budget of each project for which a work order will be issued under this agreement.

DISCUSSION:

JOC is a procurement method under which public agencies may accomplish frequently encountered repairs, maintenance, and construction projects through a single, competitively procured long-term agreement.

The JOC program includes a catalogue of pricing for a variety of potential tasks to be performed under the contract that have been pre-priced by the contractor, the Gordian Group. All potential contractors are subject to the pricing within this catalogue. Each contractor then includes an adjustment factor, escalating their proposed price from the catalogue price, to determine the total cost of the task order. The adjustment factor

represents an average percentage increase over the catalogue price (i.e. 1.25 adjustment factor represents 25% above the catalogue price) for that respective task within the project. In order to select the lowest responsive and responsible bidder, MTS staff compares each contractor's proposed adjustment factor.

The JOC contract under consideration includes railroad signal, overhead catenary system and trackwork improvements, including main line and trolley line railroad signals, grade crossing warning devices, overhead catenary, traction power, trackwork, special trackwork and related switch gear and wiring, traction power substations, and related civil construction improvements work; and all required incidental professional and technical services required for quality control monitoring and testing.

On April 9, 2020, MTS issued an Invitation for Bids (IFB) seeking a contractor to provide JOC railroad construction services with the award provided to the contractor with the lowest cumulative adjustment factor weighted as follows:

Item 1: Normal Working Hours (Non-Railroad Right-of-Way) –5%
Item 2: Other Than Normal Hours (Non-Railroad Right-of-Way) – 12%
Item 3: Normal Working Hours Along Railroad Right-of-Way – 67%
Item 4: Other Than Normal Hours Along Railroad Right-of-Way – 6%
Item 5: Restricted Work Shift – 10%

On May 12, 2020, one (1) bid was received from HMS. Following the bid opening, Procurement staff conducted a post bid survey to determine whether the solicitation contained language that might restrict competition. Procurement staff concluded that the solicitation was not restrictive, but there are very limited number of contractors both willing and able to complete these services. Vendors indicated that they did not possess the skills required to perform the work and/or they had no interest in this type of contract. Therefore, staff determined that the solicitation was conducted in a fair and open manner.

Given the award is made to the bidder with the lowest cumulative adjustment factor over the pre-priced catalogue, MTS determined that HMS was the lowest responsive and responsible bidder.

Contractor	Total Score
HMS	**1.1964**

Based on historical results for these and other JOC services, Procurement staff determined the HMS's factor adjustment to be fair and reasonable.

Today's action authorizes award of this on call contract to HMS. However, no specific project or spending is authorized. Individual projects/task orders will be processed according to the signature authority set forth in Board Policy No. 41 (e.g. task orders under $100,000 will be approved by the CEO; task orders over $100,000 will require Board approval).

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL312.0-20, with HMS, for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $2,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft Standard Construction Agreement, MTS Doc. No. PWL312.0-20

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

STANDARD AGREEMENT
FOR
MTS DOC. NO. PWL312.0-20

JOC RAILROAD SIGNALS, OVERHEAD CATENARY SYSTEMS, AND TRACK WORK CONSTRUCTION SERVICES

THIS AGREEMENT is entered into this _____ day of _____, 2020 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: HMS Construction, Inc.

Address: 2885 Scott Street
Vista, CA 92081

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email : mike@hmsconco.com

Telephone: 760.727.9808

Authorized person to sign contracts Michael C. High (Name) President (Title)

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in the Scope of Work (Exhibit A), Bid Proposal (Exhibit B), and in accordance with the Standard Construction Agreement and Special Conditions (Exhibit C), Federal Requirements (Exhibit D),JOC Special Conditions (Exhibit E), Technical Specifications Prepared by Gordian (Exhibit F), Construction Task Catalog (Exhibit G), Invitation for Bids (Exhibit H), Contractor Bonds (Exhibit I) and Contractor Forms (Exhibit J). All Exhibits to this agreement are attached separately online at enter Dropbox address.

SCOPE OF WORK.

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

JOC RAILROAD SIGNALS, OVERHEAD CATENARY SYSTEMS, AND TRACK WORK CONSTRUCTION SERVICES

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

This agreement shall be valid for a period of one (1) base year, with four (4) **option years**, exercisable at MTS's sole discretion, for a total of five (5) years. Base period shall be effective 08/01/2020 through 07/31/2021 and option years shall be effective 08/01/2021 through 07/31/2025, if exercised by MTS. Time is of the essence in the performance of the Work for each subsequent Work Order. The Work shall be commenced by the date stated in MTS's Notice to Proceed in the first Work Order of the Contract. The Contractor shall complete all Work required by the Contract Documents within the days specified in each Work Order.

CONTRACT PRICE.

MTS shall pay to the Contractor the value of any executed Work Orders under the Contract as full compensation for the performance of the Work Order, subject to any additions or deductions as provided in each Work Order. The Contact is an indefinite-quantity contract for construction work and services. There is no Minimum Contract Value of Work Orders that the Contractor is guaranteed the opportunity to perform under this Contract. The Maximum Contract Value is $2,500,000 over five (5) years.

The Contractor shall perform all work required, necessary, proper for or incidental to completing the Detailed Scope of Work called for in each individual Work Order issued pursuant to this Contract for the Unit Prices set forth in the Construction Task Catalog® and the Adjustment Factors, as provided under the Bid Form.:

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	HMS CONSTRUCTION, INC.
By: _____ Sharon Cooney, Chief Executive Officer Approved as to form: By: _____ Karen Landers, Office of General Counsel	By _____ Title: _____

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 15

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

ON-CALL JOB ORDER CONTRACTING (JOC) RAILROAD GENERAL ELECTRICAL, COMMUNICATION, AND TRAFFIC SIGNAL CONSTRUCTION SERVICES – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL311.0-20 (in substantially the same format as Attachment A), with HMS Construction, Inc. (HMS), for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $5,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

Budget Impact

The contract will be funded by various MTS capital budget accounts. Funding will be included in the budget of each project for which a work order will be issued under this agreement.

DISCUSSION:

JOC is a procurement method under which public agencies may accomplish frequently encountered repairs, maintenance, and construction projects through a single, competitively procured long-term agreement.

The JOC program includes a catalogue of pricing for a variety of potential tasks to be performed under the contract that have been pre-priced by the contractor, the Gordian Group. All potential contractors are subject to the pricing within this catalogue. Each contractor then includes an adjustment factor, escalating their proposed price from the catalogue price, to determine the total cost of the task order. The adjustment factor

represents an average percentage increase over the catalogue price (i.e. 1.25 adjustment factor represents 25% above the catalogue price) for that respective task within the project. In order to select the lowest responsive and responsible bidder, MTS staff compares each contractor's proposed adjustment factor.

The JOC contract under consideration includes general railroad electrical and communications work contracting services, including network communications, fiber optic network installations, Variable Message Sign (VMS), Closed Circuit Television (CCTV), fare system, train to wayside communications, traffic lights, traffic signalization and synchronization systems, and all required incidental and supplemental professional and technical services and work.

On April 16, 2020, MTS issued an Invitation for Bids (IFB) seeking a contractor to provide JOC railroad construction services with the award provided to the contractor with the lowest cumulative adjustment factor weighted as follows:

Item 1: Normal Working Hours (Non-Railroad Right-of-Way) – 15%
Item 2: Other Than Normal Hours (Non-Railroad Right-of-Way) – 3%
Item 3: Normal Working Hours Along Railroad Right-of-Way – 75%
Item 4: Other Than Normal Hours Along Railroad Right-of-Way – 2%
Item 5: Restricted Work Shift – 5%

On May 15, 2020, one (1) bid was received from HMS. Following the bid opening, Procurement staff conducted a post bid survey to determine whether the solicitation contained language that might restrict competition. Vendors indicated that they did not possess the skills required to perform the work and/or they had no interest in this type of contract. Therefore, staff determined that the solicitation was conducted in a fair and open manner.

Given the award is made to the bidder with the lowest cumulative adjustment factor over the pre-priced catalogue, MTS determined that HMS was the lowest responsive and responsible bidder.

Contractor	Total Score
HMS	**1.2525**

Through negotiation, MTS was able to reduce HMS's cumulative factor by 5.2750%, for **a revised factor of 1.1998%.** Based on historical results for these and other JOC services, Procurement staff determined the HMS factor adjustment to be fair and reasonable.

Today's action authorizes award of this on call contract to HMS. However, no specific project or spending is authorized. Individual projects/task orders will be processed according to the signature authority set forth in Board Policy No. 41 (e.g. task orders under $100,000 will be approved by the CEO; task orders over $100,000 will require Board approval).

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc. No. PWL311.0-20 (in substantially the same format as Attachment A) with HMS for on-call railroad general electrical, communication, and traffic signal construction services, in the amount of $5,500,000, for one (1) base year and four (4) option years beginning on August 1, 2020.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft Standard Construction Agreement, MTS Doc. No. PWL311.0-20

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

STANDARD AGREEMENT
FOR
MTS DOC. NO. PWL311.0-20

JOC RAILROAD GENERAL ELECTRICAL, COMMUNICATION, & TRAFFIC SIGNAL CONSTRUCTION SERVICES

THIS AGREEMENT is entered into this _____ day of _____, 2020 in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: HMS Construction, Inc.

Address: 2885 Scott Street
Vista, CA 92081

Form of Business: Corporation
(Corporation, Partnership, Sole Proprietor, etc.)

Email : mike@hmsconco.com

Telephone: 760.727.9808

Authorized person to sign contracts: Michael C. High (Name) — President (Title)

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in the Scope of Work (Exhibit A), Bid Proposal (Exhibit B), and in accordance with the Standard Construction Agreement and Special Conditions (Exhibit C), Federal Requirements (Exhibit D),JOC Special Conditions (Exhibit E), Technical Specifications Prepared by Gordian (Exhibit F), Construction Task Catalog (Exhibit G), Invitation for Bids (Exhibit H), Contractor Bonds (Exhibit I) and Contractor Forms (Exhibit J). All Exhibits to this agreement are attached separately online at enter Dropbox address.

SCOPE OF WORK.

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

JOC RAILROAD GENERAL ELECTRICAL, COMMUNICATION, & TRAFFIC SIGNAL CONSTRUCTION SERVICES (JOC)

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

This agreement shall be valid for a period of one (1) base year, with four (4) **option years**, exercisable at MTS's sole discretion, for a total of five (5) years. Base period shall be effective 08/01/2020 through 07/31/2021 and option years shall be effective 08/01/2021 through 07/31/2025, if exercised by MTS. Time is of the essence in the performance of the Work for each subsequent Work Order. The Work shall be commenced by the date stated in MTS's Notice to Proceed in the first Work Order of the Contract. The Contractor shall complete all Work required by the Contract Documents within the days specified in each Work Order.

CONTRACT PRICE.

MTS shall pay to the Contractor the value of any executed Work Orders under the Contract as full compensation for the performance of the Work Order, subject to any additions or deductions as provided in each Work Order. The Contact is an indefinite-quantity contract for construction work and services. There is no Minimum Contract Value of Work Orders that the Contractor is guaranteed the opportunity to perform under this Contract. The Maximum Contract Value is $5,500,000 over five (5) years.

The Contractor shall perform all work required, necessary, proper for or incidental to completing the Detailed Scope of Work called for in each individual Work Order issued pursuant to this Contract for the Unit Prices set forth in the Construction Task Catalog® and the Adjustment Factors, as provided under the Bid Form.:

PROVISIONS REQUIRED BY LAW.

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION.

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES.

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	HMS CONSTRUCTION, INC.
By: _____ Sharon Cooney, Chief Executive Officer Approved as to form: By: _____ Karen Landers, Office of General Counsel	By _____ Title: _____

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 16

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

MERCHANT ACQUIRER SERVICES – CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc No. G2338.0-20 (in substantially the same format as Attachment A), with JPMorgan Chase & Co., for the provision of Merchant Acquirer Services for a period of five (5) years with one (1) 5-year option, exercisable at the discretion of the CEO, in the estimated amount of $7,701,958.70.

Budget Impact

The project is funded as a net of revenues processed by the merchant acquirer. MTS expects to pay $ 7,701,958.70 in credit/debit processing fees over ten years, which translates to an estimated 2.91% in processing fees. The actual costs may be higher if MTS revenues received via credit card increase. Approval of MTS Doc. No. G2338.0-20 would authorize payment of all fees required by the contract. No spending limit would apply.

DISCUSSION:

MTS is in the process of implementing a new fare collection system for the region. The new fare collection system will support electronic payments made with credit or debit cards, both in person and online. It is necessary to integrate the new fare collection system with a payment processor in order to adequately process these payments.

On February 24, 2020, MTS issued a Request for Proposals (RFP) for the provision of merchant acquirer services.

On March 27, 2020, a single proposal was received from JPMorgan Chase & Co. The proposal was deemed responsive and responsible. To ascertain that the solicitation was not restrictive, MTS conducted a survey to all the firms that downloaded the RFP on Planet Bids asking them their reason(s) for not submitting a proposal. The results indicated that neither the RFP nor MTS procurement processes played a role in their decision not to submit a proposal.

A selection committee consisting of MTS Finance and Information Technology, and North County Transit District (NCTD) Finance personnel scored the proposal based on the following criteria:

1. Qualifications of the Firm or Individual	10%
2. Staffing, Organization, and Management Plan	20%
3. Work Plan	35%
4. Cost and Price	35%
	Total 100%

On April 21, 2020, the selection committee evaluated the proposal and scored as follows:

Proposer Name	Total Avg. Tech. Score	Cost Score	Total Score
JPMorgan Chase	52.67	35	87.67

After the initial evaluation of the proposal, the selection committee determined it would be in MTS's best interest to request additional clarifications from JPMorgan Chase and a best and final offer.

A cost analysis of expected interchange rates based on MTS credit/debit processing volumes revealed the estimated average cost per transaction to be 3.78% for payment processing services. A similar cost analysis was performed based on the initial schedule of fees provided by JPMorgan Chase indicating the expected per transaction fee to be 2.93% or 0.85% below the expected average cost. As a result of negotiations, JPMorgan Chase submitted a best and final offer, decreasing the expected per transaction fee to an average of 2.91%, which translates to about $50,000 in savings over ten years from the initial proposal. Based on this analysis, the rates presented by JPMorgan Chase are deemed fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute MTS Doc No. G2338.0-20, with JPMorgan Chase & Co., for the provision of Merchant Acquirer Services for a period of five (5) years with one (1) 5-year option, exercisable at the discretion of the CEO in the amount of $7,701,958.70.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft MTS Doc. No. G2338.0-20

STANDARD SERVICES AGREEMENT
FOR
MERCHANT ACQUIRER SERVICES

G2338.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Paymentech, LLC dba JPMorgan Chase Address: 8181 Communications Parkway

Form of Business: Corporation Plano TX, 75024

(Corporation, partnership, sole proprietor, etc.)

Telephone: 630-379-8573 Email Address: Matt.Leman@jpmorgan.com

Authorized person to sign contracts: Matthew P. Leman Executive Director
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Merchant Acquirer Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for five years base effective July 1, 2020 through June 30, 2025, and one 5-year option effective July 1, 2025 through June 30, 2030, exercisable at the sole discretion of MTS.

The total value of this contract is estimated not to exceed the amount of $7,701,958.70. This is based on historical transaction volumes. Payment terms shall be net 30 days from invoice date. The per transaction charges shall be in accordance with the rates and schedules in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 17

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

TEMPORARY STAFFING SERVICES – CONTRACT AWARDS

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. Nos. G2394.0-20, G2395.0-20, G2396.0-20, G2397.0-20, G2398.0-20, and G2399.0-20 (in substantially the same format as Attachments A through F) with six (6) Temporary Staffing firms (Addeco Government Solutions, AppleOne Employment Services (a Woman and Minority Owned Business Enterprise (WMBE)), Cogent Infotech Corporation, HB Staffing, Phoenix Business Consulting, and PrideStaff Inc. (a Disadvantaged Business Enterprise (DBE))) for the provision of Temporary Staffing Services for a period of five years.

Budget Impact

The total cost of each of Temporary Staffing Services agreement will be rate-based and will depend on actual usage of temporary staffing services by MTS. As individual work orders are issued under each contract, funds from the requesting department's operating or capital budget (as applicable) will be encumbered. Individual work orders exceeding the CEO's authority ($100,000) will be brought to the Board for approval.

DISCUSSION:

Temporary Staffing Services are needed to fill short-term staffing requests. MTS uses temporary employees to cover its unforeseen shortfalls including, but not limited to, prolonged illness, leaves of absence, extended position vacancies, periods of unusually high workload, and additional staffing for special projects.

On December 10, 2019, staff issued a Request for Proposals (RFP) for Temporary Staffing Services to develop a list of on-call providers for the following categories:

1. Information Technology (IT) Staffing
2. General Staffing

On January 24, 2020, MTS received a total of sixteen (16) proposals from the following:

1. Abacus Service Corporation
2. Addeco Government Solutions
3. AppleOne Employment Services
4. Cambay Consulting
5. CCS Global Tech
6. Cogent Infotech Coporartion
7. Diskriter, Inc.
8. FAAZ Consulting
9. HB Staffing
10. Infojini, Inc
11. Lawton Group
12. Phoenix Business Consulting
13. PrideStaff
14. Sierra Cybernetics
15. Transition Staffing Group
16. VTech

All were evaluated on the following criteria:

1.	Qualifications of the firm	15%
2.	Staffing, Organization and Management Plan	10%
3.	Work Plan	35%
4.	Cost (Rates)	40%
	Total	100%

MTS requested best and final offers (BAFO) from a group of firms considered to be within the competitive range after the initial evaluations. The proposed On-Call List of six (6) Temporary Staffing firms, and associated markup rates and fees, is as follows:

General Staffing Services On-Call List:

		Addeco	AppleOne	Cogent	HB Staffing	Phoenix Business	PrideStaff
Markup Rate		39.5%	43.0%	32.0%	42.5%	30.0%	38.0%
Conversion Fee	0 - 90 Days	15.0%	15.0%	15.0%	14.0%	15.0%	10.0%
	91 - 180 Days	10.0%	10.0%	0.0%	0.0%	10.0%	5.0%
	After 180 Days	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Direct Placement		15.0%	15.0%	15.0%	14.0%	18.0%	10.0%

IT Staffing On-Call List:

		Addeco	AppleOne	Cogent	Phoenix Business
Markup Rate		47.5%	53.0%	36.0%	30.0%
Conversion Fee	0 - 90 Days	18.0%	20.0%	18.0%	15.0%
	91 - 180 Days	12.0%	10.0%	12.0%	10.0%
	After 180 Days	0.0%	0.0%	0.0%	0.0%
Direct Placement		18.0%	20.0%	18.0%	18.0%

A cost analysis using current internet published market rates, and a comparison of markups previously paid by MTS, revealed that rates differ based on multiple costing considerations such as profit, overhead (including administration, sourcing, recruiting, payroll taxes, background checks, workers compensation insurance and unemployment insurance) and measures to address market driven difficulties in recruiting and retaining high quality candidates in IT. Based on this analysis, staff determined that the rates presented by the six firms were no different from prevailing market rates, and thus, deemed fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. Nos. G2394.0-20, G2395.0-20, G2396.0-20, G2397.0-20, G2398.0-20, and G2399.0-20 (in substantially the same format as Attachments A through F) with six (6) Temporary Staffing firms (Addeco Government Solutions, AppleOne Employment Services (a Woman and Minority Owned Business Enterprise (WMBE)), Cogent Infotech Corporation, HB Staffing, Phoenix Business Consulting, and PrideStaff Inc. (a Disadvantaged Business Enterprise (DBE))) for the provision of Temporary Staffing Services for a period of five years.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft MTS Doc. No. G2394.0-20
B. Draft MTS Doc. No. G2395.0-20
C. Draft MTS Doc. No. G2396.0-20
D. Draft MTS Doc. No. G2397.0-20
E. Draft MTS Doc. No. G2398.0-20
F. Draft MTS Doc. No. G2399.0-20

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2394.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Adecco Government Solutions Address: 1001 3rd Ave. W, Suite 460

Form of Business: Corporation Bradenton, FL 34205

(Corporation, partnership, sole proprietor, etc.)

Telephone: 941-746-4434 Email Address: WHarkins@TADPGS.com

Authorized person to sign contracts: Wendy Harkins Controller/CFO
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2395.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: AppleOne Employment Services Address: 16371 Beach Blvd., Suite 240

Form of Business: Corporation Huntington Beach, CA 92647

(Corporation, partnership, sole proprietor, etc.)

Telephone: 866-493-8343 Email Address: GovSolutions@AppleOne.com

Authorized person to sign contracts: Dr. Milton J. Perkins Vice President
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2396.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: COGENT Infotech Corporation Address: 1425 Greenway Drive, Suite 340

Form of Business: Corporation Irving, TX 75038

(Corporation, partnership, sole proprietor, etc.)

Telephone: 412-889-7700 Email Address: justin.acord@cogentinfo.com

Authorized person to sign contracts: Justin Acord (Name) Vice President, Sales (Title)

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM

By: _____
Chief Executive Officer

Approved as to form:

By: _____
Office of General Counsel

CONTRACTOR AUTHORIZATION

Firm: _____

By: _____
Signature

Title: _____

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2397.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: HB Staffing Address: 2120 Main Street, Suite 250

Form of Business: Corporation Huntington Beach, CA 92648

(Corporation, partnership, sole proprietor, etc.)

Telephone: 714-960-6563 Email Address: cvee@hbstaffing.com

Authorized person to sign contracts: Cathy Volpe President
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2398.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: Phoenix Business Consulting Address: 6021 Midnight Pass Road, Unit 3

Form of Business: Corporation Sarasota, FL 34242

(Corporation, partnership, sole proprietor, etc.)

Telephone: 512-557-4731 Email Address: hsarangi@phoenixteam.com

Authorized person to sign contracts: Hanif Sarangi President
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

STANDARD SERVICES AGREEMENT
FOR
TEMPORARY STAFFING SERVICES

G2399.0-20
CONTRACT NUMBER

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: PrideStaff Inc. Address: 8950 Villa La Jolla Drive, Suite A127

Form of Business: Corporation La Jolla, Ca 92037

(Corporation, partnership, sole proprietor, etc.)

Telephone: 858-453-7823 Email Address: hsarangi@phoenixteam.com

Authorized person to sign contracts: Thomas A. Young Strategic Partner/Owner
Name Title

The attached Standard Conditions are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Temporary Staffing Services, as specified in the Scope of Work (attached as Exhibit A), best and final offer cost proposal forms (attached as Exhibit B), and in accordance with the Standard Services Agreement, including Standard Conditions Services (attached as Exhibit C) and Federal Requirements (attached as Exhibit D).

The contract term is for a total of five years, effective July 1, 2020 through June 30, 2025.

Payment terms shall be net 30 days from invoice date. The markup rates shall be per the percentages shown in Exhibit B.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM CONTRACTOR AUTHORIZATION

By: _____ Firm: _____
Chief Executive Officer

Approved as to form: By: _____
Signature

By: _____
Office of General Counsel Title: _____

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 18

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

LANDSCAPE MAINTENANCE – CONTRACT AMENDMENT

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute Amendment No. 1 to MTS Doc No. PWG302.0-20 (in substantially the same format as Attachment A), with Aztec Landscaping, Inc. (Aztec), for the provision of landscape maintenance for two additional MTS properties, for a base period of five years in the amount of $192,206.70, and two optional one-year extensions in the amount of $76,994.55.

Budget Impact

With this amendment in the amount of $269,201.25, the new not-to-exceed value of this agreement is $1,395,532.54. The project will be funded through the respective fiscal years' maintenance operating budget accounts as follows:

	Budget Account	Budget Amount Base Years (5 years)	Budget Amount Optional Years (2 years)	Total Budget Amount	Board Approval Date
Bus Rapid Transit (BRT)	845012-571140	$630,052.65	$279,539.01	$909,591.66	2/13/2020
Land Management (LM)	791010-571250	$161,151.82	$55,587.81	$216,739.63	
Amendment No. 1 (LM)	791010-571250	$192,206.70	$76,994.55	$269,201.25	Today's Proposed Action
Totals		**$983,411.17**	**$412,121.37**	**$1,395,532.54**	

DISCUSSION:

On February 13, 2020, the MTS Board of Directors awarded a comprehensive multi-period landscaping maintenance services contract to Aztec. Under the current agreement, Aztec services 27 BRT Transit Center stations and six MTS-owned properties managed by MTS's Land Management department. Aztec's services include general landscaping, ground cover maintenance, weed, trash, and brush abatement services, irrigation maintenance and repair, and tree trimming/pruning services.

This amendment will add three separate portions of two MTS-owned properties; two portions near the Palomar Transit Center and one portion along Alvarado Creek near the 70th Street Trolley Station. The work at Palomar Transit Center consists of mitigating weed and vegetation growth. The property along Alvarado Creek consists of mitigating non-native and/or invasive weed, vegetation, and tree growth on the stream banks and within the streambed in order to allow the creek to flow properly. Both locations will be serviced by Aztec under the existing agreement. The servicing of the additional MTS properties is necessary to mitigate weed and vegetation growth in order to keep up the appearance of the properties, as well as to maintain the flow of the Alvarado Creek in order to reduce the risk of flooding.

MTS received a quote from Aztec for these additional areas and services and has determined that the pricing is consistent with the rates on the existing contract and therefore are fair and reasonable.

Therefore, staff recommends that the MTS Board of Directors authorize the CEO to execute Amendment No. 1 to MTS Doc No. PWG302.0-20, with Aztec, for the provision of landscape maintenance for two additional MTS properties, for a base period of five years in the amount of $192,206.70, and two optional one-year extensions in the amount of $76,994.55.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. Draft MTS Doc. No. PWG302.1-20

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101
Tel 619.231.1466 Fax 619.234.3407

Amendment 1

Effective Date: June 18, 2020 MTS Doc No. PWG302.1-20

LANDSCAPE MAINTENANCE SERVICES

Aztec Landscaping, Inc.
Rafael Aguilar
V.P. of Operations
7980 Lemon Grove Way
Lemon Grove CA, 91945

This shall serve as Amendment No.1 to the original agreement PWG302.0-20 as further described below.

SCOPE

Pursuant to the Scope of Work of, the San Diego Metropolitan Transit System (MTS) shall the add two (2) locations to the agreement: 1) Alvarado Creek portion near 70th St. Trolley station, and 2) Two portions of MTS property near the Palomar Transit Center (Attachment A)

SCHEDULE

There shall be no change to the schedule as a result of this amendment.

PAYMENT

This contract amendment shall authorize additional costs not to exceed $192,206.70 for the base years and $76,994.55 for the option years. The total value of this contract including this amendment shall be in the amount of $1,395,532.53. This amount shall not be exceeded without prior written approval from MTS (Attachment B).

Please sign and return the copy marked *original* to the Contract Specialist at MTS. All other terms and conditions shall remain the same and in effect. Retain the other copies for your records.

Sincerely,

Sharon Cooney, Chief Executive Officer

Agreed:

Rafael Aguilar, V.P. of Operations
Aztec Landscaping, Inc.

Date: _____

Attachment: A. Additional Locations, Services, and Schedule
B. Bid Form

ATTACHMENT A
ADDITIONAL LOCATIONS, SERVICES, AND SCHEDULE

SERVICE SCHEDULE

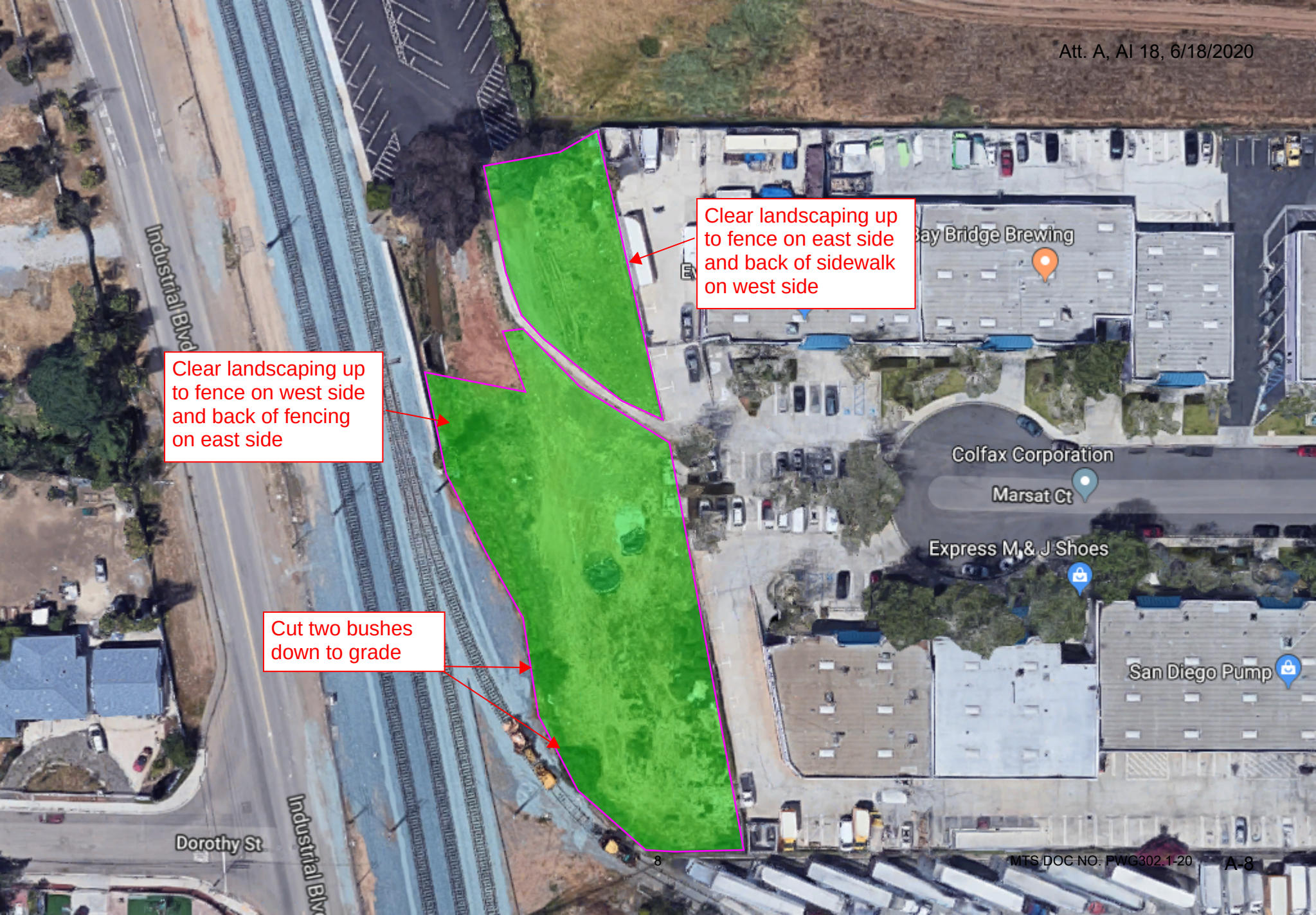
Address	Land Management																							
	Alvarado Creek portion near 70th St. Trolley station												Palomar Transit Center											
Service Frequency per Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shrubs, Hedges and Vine Maintenance									1				1			1			1			1		
Groundcover Maintenance									1				1			1			1			1		
Sprinkler and Irrigation Maintenance																								
Hardscape and Sidewalks													1			1			1			1		
Tree Pruning									1										1					
Arundo Removal									1															

Alvarado Creek portion near 70th St. Trolley station


Kumeyaay Hwy
8
Kumeyaay Hwy
8
Alvarado Rd
Alvarado Rd
Alvarado Rd
RV Community Property
58,286 sf
MTS Property
Area to maintain
Area to Maintain
Keeney St

Two portions of MTS property near the Palomar Transit Center


Oxford St
Clear landscaping up to fence on east side and back of curb on west side
Clear landscaping up to fence on west side and back of sidewalk on east side
BUFFET HOUSE
Glamour Us
Industrial Blvd
Palomar Street
Google


Clear landscaping up to fence on east side and back of sidewalk on west side
Clear landscaping up to fence on west side and back of fencing on east side
Cut two bushes down to grade
Industrial Blvd
Dorothy St
Industrial Blvd
Bay Bridge Brewing
Colfax Corporation
Marsat Ct
Express M & J Shoes
San Diego Pump

ATTACHMENT B
BID FORM

BID FORM - Landscape Maintenance and As-Needed Repair Services

Instructions: Based on the proposed schedule of services provided in "ATT 1 Monthly Service Schedule Template," please provide the monthly lump sum price for servicing of each site's landscape in the columns labeled "Unit Price" in Table I. For Table II, please enter the hourly rate for each type of as-needed repair in the column labled "Unit Price." For both Tables I and II, please multipy the *Unit Price* by the corresponding estimated *Quantity* to determine the *Item Totals* for each Item for each year. Please sum Item Totals for each Year to determine the Subtotals for Tables I & II. For Table III, please enter the mark up percentage between 0 and 3 percent (rounding to the nearest hundreth) in the *% Mark Up* field for each year. Please multiply the mark up percentage by the *Annual Materials/Parts Allowance* (Item 1) for each respective year. The annual *As-Needed Materials/Parts* amount is the sum of Items 1 and 2 for each year. The *Grand Total* is the sum of the *Subtotals* for Tables I, II & III .

Table I: ELEVATOR PREVENTATIVE MAINTENANCE AND REPAIR				Year One		Year Two		Year Three		Year Four		Year Five		Optional Year One		Optional Year Two	
Group	Item	Location	Quantity	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total
	35	Alvarado Creek portion near 70th St. Trolley station	1	$ 30,140.00	$ 30,140.00	$ 21,939.00	$ 21,939.00	$ 22,597.17	$ 22,597.17	$ 23,274.91	$ 23,274.91	$ 23,973.16	$ 23,973.16	$ 24,692.35	$ 24,692.35	$ 25,433.12	$ 25,433.12
	36	Palomar Transit Center Year 1 - Initial Clean up	1	$ 13,243.00	$ 13,243.00												
		Palomar Transit Center Year 1 - Subsequent Clean ups	2	$ 3,920.00	$ 7,840.00												
	36a	Palomar Transit Center Subsequent Years	3			$ 3,920.00	$ 11,760.00	$ 4,037.60	$ 12,112.80	$ 4,158.73	$ 12,476.19	$ 4,283.49	$ 12,850.47	$ 4,412.00	$ 13,236.00	$ 4,544.36	$ 13,633.08
		Table I Subtotals			$ 51,223.00		$ 33,699.00		$ 34,709.97		$ 35,751.10		$ 36,823.63		$ 37,928.35		$ 39,066.20

Grand Total	**$ 269,201.25**

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 19

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

SAN DIEGO METROPOLITAN TRANSIT SYSTEM (MTS) MIDDLETOWN 9,11 – OVERHEAD CATENARY SYSTEM (OCS) CONSTRUCTION - CONTRACT AWARD

RECOMMENDATION:

That the San Diego Metropolitan Transit System (MTS) Board of Directors authorize the Chief Executive Officer (CEO) to execute MTS Doc. No. PWL307.0-20 (in substantially the same format as Attachment A), with HMS Construction Inc. (HMS), for Middletown 9,11 – Overhead Catenary System (OCS) in the amount of $1,009,985.00, plus authorize a 20% contingency fund for construction change orders.

Budget Impact

The total cost of this Agreement will not exceed $1,211,982.00, including a 20% contingency over the duration of the construction services consisting of the following:

DESCRIPTION	BID AMOUNT	W/ 20% CONTINGENCY
Base - Executing	$856,031.00	$1,027,237.20
Add Alternate 2 – Executing	$153,954.00	$184,744.80
TOTAL INCLUDING ADD ALT	**$1,009,985.00**	**$1,211,982.00**

Funding will be through two MTS Capital Improvement Project (CIP) accounts as follows:

CIP Number	CIP Description	AMOUNT
2006101101	Middletown Double Crossover	$1,027,237.20
2005111301	25th and Commercial Crossover	$184,744.80
TOTAL		**$1,211,982.00**

DISCUSSION:

MTS's Sycuan Green Line and Orange Line require replacement of several major track components which are at the end of their useful life, including but not limited to, worn rail and ties, gauge tolerance issues, crossing upgrades, special trackwork upgrades, signal upgrades, and overhead catenary system (OCS) upgrades. As such, MTS will be making several track improvements on the Trolley trackway.

In October 2019, the Board authorized the execution of a separate contract (MTS Doc. No. PWL285.0-19) to install a new double-crossover north of the Middletown Station on the Sycuan Green Line and the relocation of existing crossover along Commercial Street on the Orange Line. The existing contract is for trackwork and signal improvements only.

The OCS work required for this project was secured through the issuance of a separate solicitation to ensure adequate competition on the track replacement service. This new contract is to complete the required OCS upgrades associated with the Orange and Green Line Track Improvement Project. The work encompasses signal and overhead catenary repair and replacement.

On February 27, 2020 staff issued an Invitation for Bids (IFB). The following bids were received:

ORANGE/GREEN LINE OCS IMPROVEMENTS	
COMPANY NAME	**BID AMOUNT**
HMS	**$1,009,985**
Belfour Beatty	$2,544,155
MTS - ICE	$431,000

Based on the bids received, and in comparison with the Independent Cost Estimate (ICE), MTS staff noticed that there was a large discrepancy between the low bid and the ICE. Staff discussed this discrepancy with the design firm that calculated the estimate and they indicated that there are three main reasons why there was a discrepancy:

1. A major portion of the work requires significant coordination with another contractor. This increases on the job risk and uncertainty.
2. The original estimate was calculated in 2018. Since then, there has been significant changes to the market place, including tariffs.
3. This is highly specialized work that has a limited pool of contractors in Southern California and therefore their pricing drives the regional market.

With this understanding, and after reviewing cost proposals for this work performed at other agencies, staff has determined that the pricing submitted by HMS is fair and reasonable.

Today's action would also authorize a 20% contingency fund totaling $201,997.00. This is prudent and customary for a project of this nature where unforeseen conditions or design changes may require adjustments to the scope of work or schedule. Requiring individual change orders to be brought to the Board for approval can significantly delay projects; at times, delay is not feasible given the specific unforeseen condition.

Therefore, staff recommends that the MTS Board authorize the CEO to execute MTS Doc. No. PWL307.0-20, with HMS, for Middletown 9,11 – Overhead Catenary System (OCS) in the amount of $1,009,985.00, plus authorize a 20% contingency fund for construction change orders.

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachments: A. Draft MTS Doc. No. PWL307.0-20
B. Price breakdown

STANDARD CONSTRUCTION AGREEMENT

FOR

MTS DOC. NO. PWL307.0-20

MIDDLETOWN 9,11 - OVERHEAD CATENARY SYSTEM (OCS)

THIS AGREEMENT is entered into this _____ day of _____ 2020, in the State of California by and between San Diego Metropolitan Transit System ("MTS"), a California public agency, and the following, hereinafter referred to as "Contractor":

Name: HMS Construction Inc.

Address: 2885 Scott St. Vista, Ca 92081
Vista, Ca 92081

Form of Business: Corp
(Corporation, Partnership, Sole Proprietor, etc.)

Email :

Telephone: 760-727-9808

Authorized person to sign contracts Michael C. High President
Name Title

The specified Contract Documents are part of this Agreement. The Contractor agrees to furnish to MTS services and materials, as follows:

Contractor shall furnish all necessary management, supervision, labor, materials, tools, supplies, equipment, plant, services, engineering, testing and/or any other act or thing required to diligently and fully perform and complete the Project as specified in the Scope of Work, Special Conditions and Attachments (Exhibit A), Bid Price Form (Exhibit B), and in accordance with the General Conditions (Exhibit C), and Forms (Exhibit D).

SCOPE OF WORK

Contractor, for and in consideration of the payment to be made to Contractor as hereinafter provided, shall furnish all plant, labor, technical and professional services, supervision, materials and equipment, other than such materials and equipment as may be specified to be furnished by MTS, and perform all operations necessary to complete the Work in strict conformance with the Contract Documents (defined below) for the following public work of improvement:

MIDDLETOWN 9,11 - OVERHEAD CATENARY SYSTEM (OCS)

Contractor is an independent contractor and not an agent of MTS. The Contractor and its surety shall be liable to MTS for any damages arising as a result of the Contractor's failure to comply with this obligation.

CONTRACT TIME.

Time is of the essence in the performance of the Work. The Work shall be commenced by the date stated in MTS's Notice to Proceed. The Contractor shall complete all Base Bid Work

required by the Contract Documents within **290** calendar **days** from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the Contract Time is adequate and reasonable to complete the Work. The Contractor shall complete all Add Alternate Work required by the Contract Documents within **350** calendar **days** from the commencement date stated in the Notice to Proceed.

CONTRACT PRICE

MTS shall pay the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of one million nine thousand nine hundred eighty five dollars ($1,009,985.00). Payment shall be made as set forth in the General Conditions.

PROVISIONS REQUIRED BY LAW

Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of the California Labor Code applicable to this Project.

INDEMNIFICATION

Contractor shall provide indemnification as set forth in the General Conditions.

PREVAILING WAGES

Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at MTS's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

SAN DIEGO METROPOLITAN TRANSIT SYSTEM	**CONTRACTOR NAME**
By: _____ **Sharon Cooney, Chief Executive Officer**	**By** _____
Approved as to form:	
By: _____ **Karen Landers, Office of General Counsel**	**Title:** _____

Middletown and Orange Line OCS Improvements Bid Price Summary
SUMMARY
IFB Cost

LINE NO.	ITEM	TOTAL
1.	*Middletown Double Crossover Installation (OCS Portion) Base*	$ 848,231
2.	*Additive Alternative 2 - Commercial Crossover Installation (OCS Portion)*	$ 153,954
	Subototal Bid items 1 & 2	$ 1,002,185
3.	*BID BOND (10% Based on Total A & B)*	$ 7,800
	Grand Total Basis of Award	$ 1,009,985

Middletown Double Crossover Installation (OCS Portion)
IFB Cost

LINE NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Temporary Storm Water Pollution Control				
1.	Temporary Storm Water Pollution Control	1	LS	$ 6,077	$ 6,077
	OCS				
2.	Catenary Foundations	10	EA	$ 12,812	$ 128,120
3.	Standard Catenary Poles	7	EA	$ 11,921	$ 83,447
4.	Down Guys	4	EA	$ 13,487	$ 53,948
5.	Portal Beam	1	FT	$ 54,431	$ 54,431
6.	Cantilevers	12	EA	$ 5,819	$ 69,828
7.	Reprofile Mainline Catenary	1	LOT	$ 29,702	$ 29,702
8.	Balance Weight Anchors	2	EA	$ 42,562	$ 85,124
9.	Fixed Termination	2	EA	$ 14,758	$ 29,516
10.	Wire Crossover Tracks	1,000	FT	$ 77	$ 77,000
11.	Miscellaneous Catenary Hardware	1	LOT	$ 26,375	$ 26,375
12.	Disconnect Switches	4	EA	$ 14,597	$ 58,388
13.	Section Insulators	6	EA	$ 20,093	$ 120,558
14.	Double Lightning Arrester	2	EA	$ 6,731	$ 13,462
	SUBTOTAL - Base Construction				$ 835,976
15.	Mobilization/Demobilization	1	LS		$ 12,155
	Total Base Construction				**$ 848,131**
	BONDS- Payment / Performance (100%)				$ 100
	TOTAL CONSTRUCTION COST				$ 848,231

Orange Line Track Improvements
Additive Alternative 2 (OCS PORTION)
Commercial Crossover Installation
IFB Cost

LINE NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Traffic Control				
1.	Traffic Control	1	LS	12,155.00	12,155.00
	Temporary Storm Water Pollution Control				
2.	Temporary Storm Water Pollution Control	1	LS	6,077.00	6,077.00
	Overhead Contact System				
3.	Overhead Contact System	1	LS	129,545.00	129,545.00
	Sub-Total Base Construction				147,777.00
4.	Mobilization/Demobilization	1	LS	6,077.00	6,077.00
	Total Base Construction				153,854.00
5.	**Payment and Performance Bond (100%)**				100.00
	Add Alt 2 Total				153,954.00

Metropolitan Transit System

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466 • FAX (619) 234-3407

Agenda Item No. 20

MEETING OF THE SAN DIEGO METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

June 18, 2020

Draft for Executive Committee Review Date: 6/11/2020

SUBJECT:

SEMIANNUAL UNIFORM REPORT OF DISADVANTAGED BUSINESS ENTERPRISE (DBE) AWARDS AND PAYMENTS

INFORMATIONAL ONLY

Budget Impact

None.

DISCUSSION:

As a Federal Transit Administration (FTA) grantee, San Diego Metropolitan Transit System (MTS) complies with the federal regulations set forth in 49 CFR Part 26 regarding participation by DBEs in the U.S. Department of Transportation (DOT) Program.

I. Goals of MTS's DBE Program

The goals of MTS's race-neutral DBE program are:

1. to ensure nondiscrimination in the award and administration of DOT-assisted contracts;
2. to create a level playing field on which DBEs can compete fairly for DOT-assisted contracts;
3. to ensure that the DBE program is narrowly tailored in accordance with applicable law;
4. to ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs;
5. to help remove barriers to the participation of DBEs in DOT-assisted contracts;
6. to assist the development of firms that can compete successfully in the marketplace outside of the DBE program; and
7. to provide appropriate flexibility to recipients of federal financial assistance in establishing and providing opportunities for DBEs.

II. MTS's DBE Triennial Overall Goal for FFY 2019- 2021

The DBE regulations require MTS to prepare a DBE Triennial Overall Goal. The DBE Triennial Overall Goal is established upon the number of ready, willing, and able DBE contractors within MTS's geographic market area that are available to bid on MTS's federally assisted procurements (excludes transit vehicle procurements). For the current triennial reporting period (October 1, 2018 to September 30, 2021), MTS has an aspirational overall goal of **2.9%** DBE participation on federally funded contracts.

III. Participation by certified DBEs

For purposes of reporting DBE participation to the FTA, MTS may only count participation by certified DBE contractors. In order to be certified as a DBE through the California Unified Certification Program, contractors must:

(1) have a majority owner who is **socially and economically disadvantaged** (Native Americans, African Americans, Hispanics, Asian-Pacific, Subcontinent Asian Americans and women are currently presumed to be socially and economically disadvantaged by the DOT);

(2) the majority owner must have a personal net worth of less than **$1,320,000**; and

(3) the business must be a **small business** and, for *most* types of businesses, have average annual gross receipts less than **$23,980,000**.

Per DOT DBE Regulations, MTS ***may not*** count participation from certified minority owned businesses (MBE), disabled veteran owned businesses (DVBE), women owned businesses (WBE), small businesses (SB) or lesbian gay bisexual transgender owned businesses (LGBTBE) (collectively referred to as SBEs) toward meeting its DBE Triennial Overall Goal. Nonetheless, MTS encourages participation from, conducts outreach to, and tracks awards to SBEs.

IV. Race-Neutral Outreach Measures to Increase DBE and SBE Participation

A race-neutral DBE program means that there are no DBE contract specific goals and no advantages provided to interested DBE contractors when submitting bids or proposals. Successful bidders are chosen using race-neutral means, generally through a low-bid or best-value procurement process.

To increase DBE participation on MTS's federally assisted procurements, as well as SBE participation on all MTS's contracts, MTS conducts outreach to DBEs and SBEs in an effort to inform them of upcoming MTS procurements. The following are some of the race-neutral measures MTS has implemented:

1. outreach to past and current MBEs, DVBEs, WBEs, SBs and LGBTBEs to discuss the benefits of DBE certification and what qualifications are necessary to become DBE certified, as some may already qualify;

2. outreach to past and current DBEs, MBEs, DVBEs, WBEs, SBs and LGBTBEs requesting that they register on PlanetBids so they can receive automatic notification of upcoming MTS formal procurements;

3. for small purchase procurements in which MTS must seek out three (3) bids, MTS aims to advertise more of these procurement on PlanetBids so as to increase the potential of DBEs, MBEs, DVBEs, WBEs, SBs or LGBTBEs learning of the procurement, if such a contractor is available to perform the work;

4. for small purchase procurements in which MTS must seek out three (3) bids, seeking at least one (1) of those bids from a DBE or SBE, if available; and

5. attend and actively promote small business conferences and programs to alert DBEs, MBEs, DVBEs, WBEs, SBs or LGBTBEs of upcoming MTS contracting opportunities and to educate about MTS's procurement and DBE program.

Due to the COVID-19 public health emergency, outreach events have been cancelled until further notice. Local organizations are reviewing whether hosting virtual outreach events can be an option moving forward.

Prior to COVID-19 public health emergency, MTS was able to attend the California Department of General Services Annual California Procurement Fair on March 12, 2020. The outreach event provided MTS the ability to meet with Contractors and discuss MTS's DBE Program and MTS's upcoming contracting opportunities.

V. Federally Funded Procurements

Only contracts awarded and paid by MTS using federal funds (or a portion of federal funds) are reported to the FTA per DOT DBE Regulations. MTS generally reserves federal funds for transit vehicle procurements, transit facility improvements, and state-of-good-repair vehicle or system preventative maintenance projects. MTS generally uses local and state funds for capital projects (e.g. construction, engineering), administrative costs and other expenses (e.g. marketing expenses, land management, office supplies).

VI. Summary of Semi-Annual DBE Report Achievement (Federal Funds Only)

The FTA Semi-Annual Report for October 1, 2019 to March 31, 2020 is the third of six reports in the triennial period of FFY 2019-2021.

a. Contracts Awarded

For this reporting period, MTS **did not achieve** its DBE Triennial Overall Goal of 2.9% for contracts awarded. MTS achieved **1.20%** DBE participation for contracts awarded.

	Federal Contract Awards/Commitments			**Goal**
REPORTING PERIOD	Total Federal $$	DBE $$	DBE %	vs 2.9%
Federal Funds: Oct 1 2019 to Mar 31 2020	$7,065,591.07	$84,861.22	**1.20%**	-1.70%

The main reasons for why MTS was not able to meet its DBE Triennial Overall Goal for contracts awarded was due to awarding three (3) large contracts to non-DBE firms. The first was to Advanced Rail Management, a non-DBE, for a five (5) year, rail maintenance program in the amount of $3,091,938.01 (80% federally funded). The second was to Motorola Solutions, a non-DBE, for RTMS Radio Hardware Upgrade Vehicle Upgrades in the amount of $2,950,000 (38% federally funded). Each of these solicitations received only one (1) proposal due to the unique and specialized services these projects required. The third was to Kone, a non-DBE, for as-need repairs for elevators and escalators in the

amount of $1,166,821.02 (80% federally funded). This solicitation received only two (2) proposals, as there are limited firms that perform this work. There are no DBE firms within the geographic service area that perform the services required in these three (3) solicitations.

b. Contracts Open

For this reporting period, MTS **achieved** its DBE Triennial Overall Goal of 2.9% for contracts opened. MTS achieved **9.63%** DBE participation for contracts open.

	Federal Contracts Open/Payments During Reporting Period			Goal
REPORTING PERIOD	Total Federal $$	DBE $$	DBE %	vs 2.9%
Federal Funds: Oct 1 2019 to Mar 31 2020	$8,084,966.66	$778,507.86	**9.63%**	+6.73%

The main reason why MTS was able to meet its DBE Triennial Overall Goal for contracts opened was due to ongoing payments to **NMS Management**, a **DBE** firm, for janitorial and anti-graffiti services in the amount of $884,252.89 (80% federally funded). Payments on smaller contracts to DBE firms also assisted MTS in meeting its goal.

c. Contracts Completed

For this reporting period, MTS **did not achieve** its DBE Triennial Overall Goal of 2.9% for contracts completed. MTS achieved **0.34%** DBE participation for contracts completed.

	Federal Contracts Completed/Total Payments			Goal
REPORTING PERIOD	Total Federal $$	DBE $$	DBE %	vs 2.9%
Federal Funds: Oct 1 2019 to Mar 31 2020	$5,941,014.34	$20,263.01	**0.34%**	-2.56%

The main reason why MTS was not able to meet its DBE Triennial Overall Goal for contracts completed was due to completing a contract for ERP/TAM Implementation Consulting Services to Labyrinth Solutions, a non-DBE, for $7,822,622.35 (63% federally funded). In addition, none of MTS's preventative maintenance contracts awarded to a DBE firm were closed out during this reporting period, which is one of the main ways MTS has historically met its DBE Triennial Overall Goal. Please note, MTS decides contract performance periods based on MTS business and operational needs. Every reporting period will differ on the number, type and dollar amount of contracts closed out.

VII. Summary of Annual Achievement Toward Meeting MTS's DBE Triennial Overall Goal for FFY 2020

The FTA requires a shortfall analysis and corrective action plan whenever the DBE Triennial Overall Goal is not met within a Fiscal Year. For the first part of FFY 2020 (October 1, 2019 to March 31, 2020), MTS did not achieve its DBE Triennial Overall Goal of 2.9% (MTS only achieved **1.20%**).

For the second part of FFY 2020 (April 1, 2020 to September 30, 2020), MTS also does not expect to achieve its DBE Triennial Overall Goal. This is because of a large contract award to First Transit for Paratransit and Minibus Services for a six (6) year base in the amount of $179,345,871.66 (partly federally funded) that occurred in April 2020. This

large contract will significantly dilute any achieved DBE participation in the upcoming reporting period.

If necessary, upon completion of the next reporting period, MTS will be preparing a shortfall analysis and corrective action plan to show what steps MTS will be taking to help overcome this shortfall in DBE participation.

VIII. Summary of Triennial Achievement Toward Meeting MTS's DBE Triennial Overall Goal for FFY 2019 – FFY 2021

While the specific DBE participation rate for each six (6) month reporting period may fluctuate, the goal of the MTS DBE program is to achieve the 2.9% DBE Triennial Overall Goal as an average for the FFY 2019-2021 triennial period. MTS currently has a **16.91%** achievement toward meeting its DBE Triennial Overall Goal, which **exceeds** MTS's DBE Triennial Overall Goal of 2.9%. MTS will continue to monitor MTS's achievement toward meeting MTS's Triennial Overall Goal after each completed reporting period.

DBE Achievement for FFY 2019 - FFY 2021				
FFY	**Reporting Period**	**Total Fed Awarded**	**Total DBE Awarded**	**DBE %**
FFY 2019	Oct 1 18 to Mar 31 19	$8,603,476.55	$204,022.26	**2.37%**
FFY 2019	April 1 19 to Sept 30 19	$9,005,016.32	$3,884,727.66	**43.14%**
FFY 2020	Oct 1 19 to Mar 31 20	$7,065,591.07	$84,861.22	**1.20%**
FFY 2020	*April 1 20 to Sept 30 20*	*Not yet completed*		
FFY 2021	*Oct 1 20 to Mar 31 21*			
FFY 2021	*April 1 21 to Sept 30 21*			
Achievement Toward Meeting FFY 2019-2021 DBE Triennial Overall Goal of 2.9% (FFY 2019-2021 Total DBE Awarded ÷ FFY 2019-2021 Total Fed Awarded)		IN PROGRESS: **16.91%** Achieved towards Overall Triennial Goal (**exceeds** 2.9% Goal)		

IX. Summary of DBE, WBE, MBE, DVBE, LGBTBE and SB Participation for all Contracts (Regardless of Funding Source)

Although MTS may not count participation of MBE, DVBE, WBE, SB and LGBTBE (collectively referred to as SBEs) towards achievement of its DBE Overall Triennial Goal, MTS does record the participation of these businesses to gauge the success of its program to foster small business participation. MTS encourages the participation of DBEs and SBEs on all of its contracts, no matter the funding source.

MTS's DBE and SBE participation rates for the reporting period, using both local and federal funds, were as follows:

	All Contract Awards/Commitments (All Funding Sources)				
REPORTING PERIOD	Total $$	DBE $$	DBE %	SBE $$ (MBE, DVBE, WBE, SB and LGBTBE)	SBE %
Total Funds: Oct 1 2019 to Mar 31 2020	$52,022,126.82	$4,330,163,32	8.32%	$5,126,911,79	9.86%

When reviewing highlights of DBE achievements that were awarded with local funds, MTS awarded a:

- five (5) year contract to **NMS Management**, a **DBE**, for janitorial services at Bus Rapid Transit Stations, in the amount of $3,858,605.84 (100% locally funded).
- **Pacific Railway Enterprises**, a **DBE**, for design services relating to the Middletown Double Crossover in the amoutn of $256,690.73 (100% locally funded)

When reviewing highlights of SBE achievements, MTS awarded:

- 10 year contract with **Atlas Environmental Services**, a **SB**, for on-call tree trimming and removal services in the amount of $501,120.00 (80% federally funded);
- three (3) option years to **Ocean Blue Environmental**, a **MBE**, for hazardous waste and trauma clean up services in the amount of $347,710.05 (80% federally funded);
- Subcontractor award to **Day Wireless**, a **SB**, for radio equipment installation services in the amount of $295,000.00 (38% federally funded);
- three (3) year contract to **Nth Generation**, a **WBE**, for Commvault support and maintenance in the amount of $292,716.00 (100% locally funded);
- **Nth Generation,** a **WBE**, for centralized train control (CTC) system technology refresh in the amount of $266,060.24 (100% locally funded);
- **NetXperts,** a **SB,** for equipment for network device refresh in the amount of $261,005.06 (100% locally funded);
- **Nth Generation,** a **WBE,** for closed circuit television (CCTV) Server refresh in the amount of $239,255,26 (100% locally funded);
- contract amendment to **My Electrician**, a **DVBE** and **MBE**, for a change in VMS monitors, in the amount of $223,828.79 (80% federally funded); and
- **Makai Solutions**, a **SB**, for LRV lift installation services in the amount of $220,717.97 (100% locally funded).

These awards, and others, helped MTS achieve a ***record*** high SBE achievement percentage when compared to the past four years (Attachment A).

/s/ Sharon Cooney
Sharon Cooney
Chief Executive Officer

Key Staff Contact: Sharon Cooney, 619.557.4513, Sharon.Cooney@sdmts.com

Attachment: A. History of Semi-Annual Reports for Contracts Awarded

MTS History of DBE Semi Annual Reports

Contract Awards/Commitments*

	Federal DBE GOAL	REPORTING PERIOD	TOTAL DOLLARS AWARDED (fed & local)	Total DBE $$	Total DBE %	Total SBE $$	Total SBE %	Total Federal $$	Federal DBE $$	Federal DBE %	Federal SBE $$	Federal SBE %	Total Local $$	Local DBE $$	Local DBE %	Local SBE $	LOCAL SBE %
FFY16	3.75%	Oct 1 15 to Mar 31 16	$ 63,883,438.52	$ 298,902.02	0.47%	$ 2,929,504.04	4.59%	$ 4,094,298.13	$ 11,859.89	0.29%	$ 246,645.99	6.02%	$ 59,789,140.39	$ 287,042.13	0.48%	$ 2,682,858.05	4.49%
		April 1 16 to Sept 30 16	$ 32,178,592.14	$ 976,115.34	3.03%	$ 996,434.97	3.10%	$ 6,418,545.41	$ 255,760.97	3.98%	$ 148,325.08	2.31%	$ 25,760,046.73	$ 720,354.37	2.80%	$ 848,109.89	3.29%
FFY17**		Oct 1 16 to Mar 31 17	$ 92,516,929.91	$ 5,611,166.70	6.07%	$ 3,735,641.71	4.04%	$ 19,827,518.60	$ 3,781,098.94	19.07%	$ 196,188.57	0.99%	$ 72,689,411.31	$ 1,830,067.76	2.52%	$ 3,539,453.14	4.87%
		April 1 17 to Sept 30 17	$ 40,939,010.42	$ 478,288.92	1.17%	$ 1,622,764.06	3.96%	$ 3,326,175.53	$ 31,444.62	0.95%	$ 405,594.52	12.19%	$ 37,612,834.89	$ 446,844.30	1.19%	$ 1,217,169.54	3.24%
FFY18		Oct 1 17 to Mar 31 18	$ 31,874,559.08	$ 754,167.60	2.37%	$ 3,002,750.48	9.42%	$ 5,888,603.26	$ 107,876.47	1.83%	$ 716,139.92	12.16%	$ 25,985,955.82	$ 646,291.13	2.49%	$ 2,286,610.56	8.80%
		April 1 18 to Sept 30 18	$ 68,024,202.91	$ 1,725,734.24	2.54%	$ 4,982,014.37	7.32%	$ 5,453,720.86	$ 977,533.90	17.92%	$ 267,303.01	4.90%	$ 62,570,482.05	$ 748,200.34	1.20%	$ 4,714,711.36	7.54%
FFY16-18	**3.75%**	**Oct 1, 2015 thru Sept 30, 2018 (6 semi-annual reports)**	**$ 329,416,732.98**	**$ 9,844,374.82**	**2.99%**	**$ 17,269,109.63**	**5.24%**	**$ 45,008,861.79**	**$ 5,165,574.79**	**11.48%**	**$ 1,980,197.09**	**4.40%**	**$284,407,871.19**	**$ 4,678,800.03**	**1.65%**	**$ 15,288,912.54**	**5.38%**
FFY19	2.9%	Oct 1 18 to Mar 31 19	$ 73,790,097.91	$ 606,817.10	0.82%	$ 5,715,068.36	7.75%	$ 8,603,476.55	$ 204,022.26	2.37%	$ 182,110.81	2.12%	$ 65,186,621.36	$ 402,794.84	0.62%	$ 5,532,957.55	8.49%
		April 1 19 to Sept 30 19	$ 40,005,268.47	$ 6,243,719.33	15.61%	$ 1,796,894.06	4.49%	$ 9,005,016.32	$ 3,884,727.66	43.14%	$ 644,406.58	7.16%	$ 31,000,252.15	$ 2,358,991.67	7.61%	$ 1,152,487.48	3.72%
FFY20		Oct 1 19 to Mar 31 20	$ 52,022,126.82	$ 4,330,163.32	8.32%	$ 5,126,911.79	9.86%	$ 7,065,591.07	$ 84,861.22	1.20%	$ 1,421,254.28	20.12%	$ 44,956,535.75	$ 4,245,302.10	9.44%	$ 3,705,657.51	8.24%
		April 1 20 to Sept 30 20	$ -	$ -		$ -											
FFY21		Oct 1 20 to Mar 31 21	$ -	$ -		$ -											
		April 1 21 to Sept 30 21	$ -	$ -		$ -											
FFY19-21	**2.9%**	**Oct 1, 2018 thru Sept 30, 2021 (6 semi-annual reports *IN PROGRESS*)**	**$ 165,817,493.20**	**$ 11,180,699.75**	**6.74%**	**$ 12,638,874.21**	**7.62%**	**$ 24,674,083.94**	**$ 4,173,611.14**	**16.91%**	**$ 2,247,771.67**	**9.11%**	**$141,143,409.26**	**$ 7,007,088.61**	**4.96%**	**$ 10,391,102.54**	**7.36%**

***Transit Vehicle Procurements (buses, trolleys) from Transit Vehicle Manufacturers (TVM) are not included in this Report per DOT DBE Regulations. TVMs have their own DBE Program, Goals and Reporting requirements. Inventory procurements are also not included. Only at time an inventory item is issued from store room will the federal/local breakdown be known, not at the time of purchase. ***

****In FY17, MTS began using the U.S. Small Business Administration Database, which provides a listing of Small Businesses. This Database tracks firms in which revenues and/or number of employees do not exceed the North American Industry Classifcation System (NAICS) code's small business size standards, which is used to determine whether a DBE is a small business or not.****

Public Comments – Agenda Item #G

1. Oscar Medina, Environmental Health Coalition
2. Laura Benavidez, Environmental Health Coalition
3. Julio Garcia, City Heights CDC
4. Nate Fairman, IBEW 465